Simergy FAQ Starter

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Frequently Asked Questions - the Starter Set...

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FAQ: How to draw a Site Object?

*Note: Remember that all Simergy Geometry creation is a 4-Step Process - **(New, Define Inputs, Preview, Save)** to make the object part of the BEM*

1. Go to the **Site** (tab) and **Site Definition** (Ribbon) **Create/Edit Site Elements** Workspace
2. In the Create/Edit Site Elements field select "New". This initiates the process
3. What type of Site Object? (Adjacent Site, Solar Obstruction, Power Demand, Power Generation)
    3.1. Note: Depending on your Object Type selection the inputs in this field will adjust
4. Make the following inputs:
    4.1. Name - use default
    4.2. Object Type = Adjacent Site
    4.3. Shape = Rectangle
    4.4. Origin X = -280
5. Hit Preview - Isn't it Magic! But we aren't done yet...
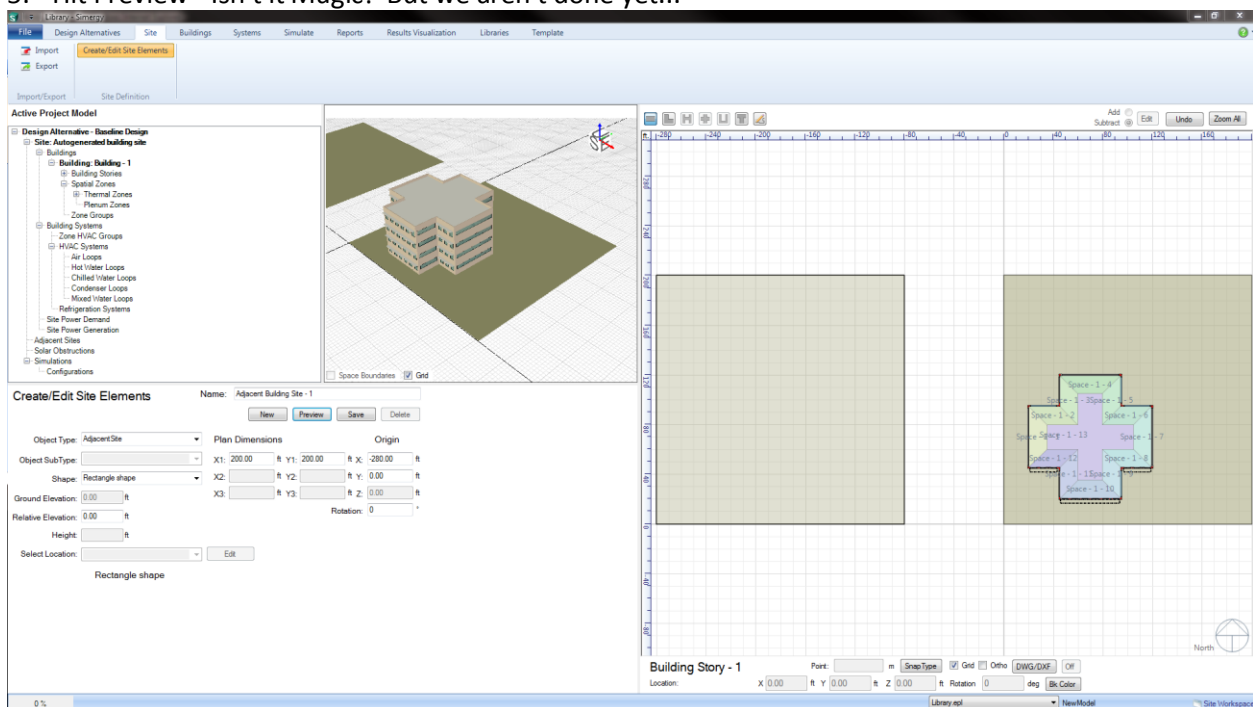
6. Make changes if necessary and select Preview again (rinse and repeat). In our case its perfect, so we can move on.
7. Hit Save. Now the Adjacent Site is part of the BEM.
8. Now let's add a Solar Obstruction (a.k.a. a building next to our building)
9. Select New again
10. Make the following inputs:
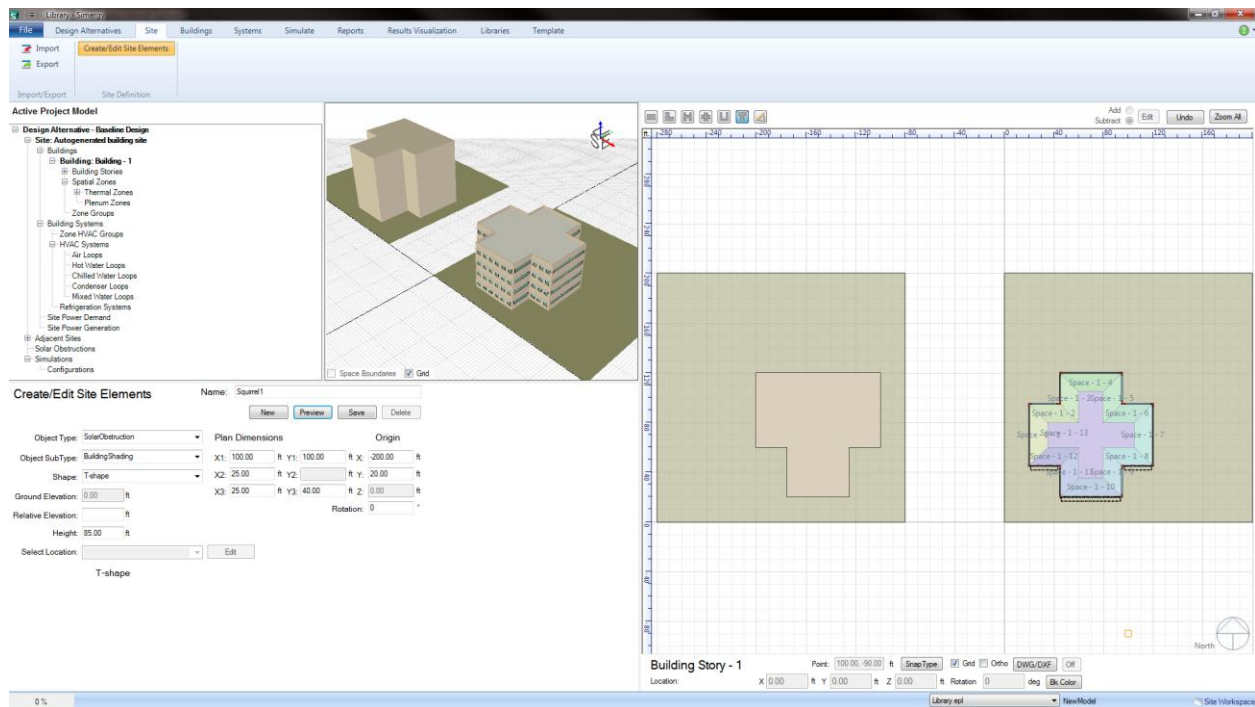
10.1. Name = Squirrel1

10.2. Object Sub Type = Building Shading

10.3. Shape = T-Shape

10.4. Origin Values - X = -200; Y =20

10.5. Height = 85

11. Hit Preview

12. Make changes if necessary and select Preview again (rinse and repeat). In our case its still perfect, so we can move on.

13. Hit Save
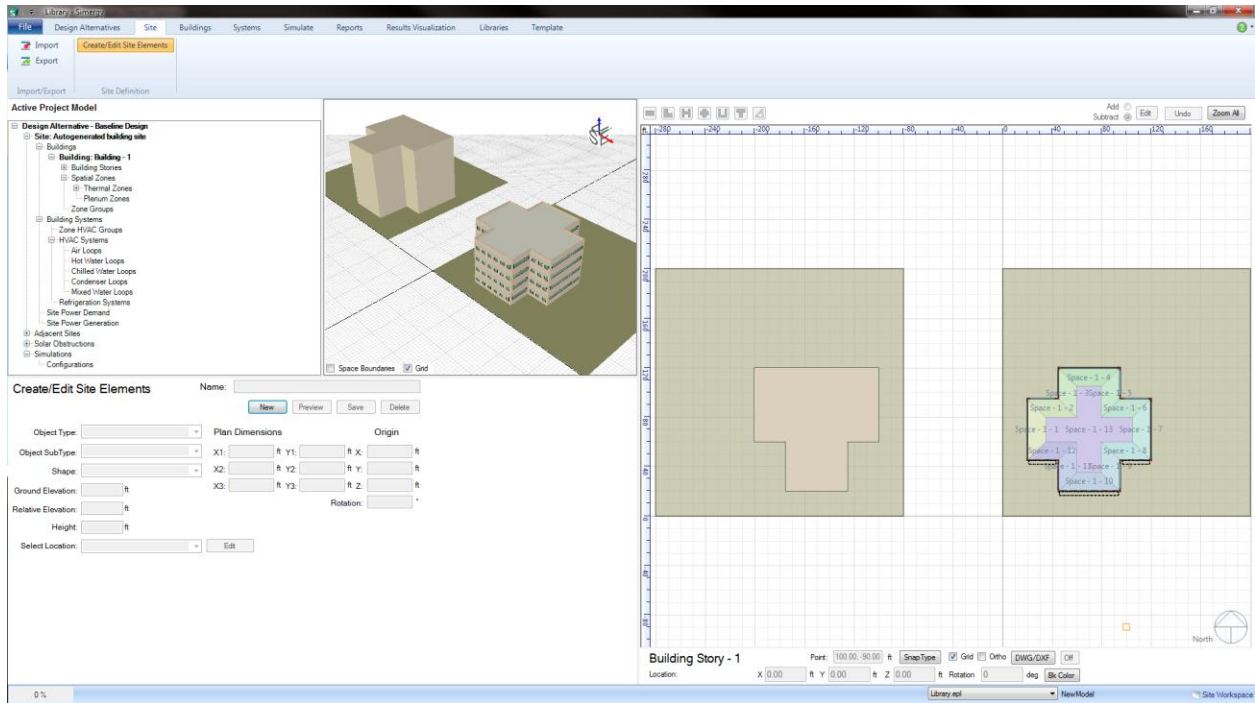
14. Save Simergy File, because although the Building Object is part of the Simergy file, the file has yet to be saved.

FAQ: How to draw a Building Object?

*Note: Remember that all Simergy Geometry creation is a 4-Step Process - **(New, Define Inputs, Preview, Save)** to make the object part of the BEM.*

1. Go to the **Buildings** (tab) and **Building/Floor/Zone Definition** (Ribbon) **Create/Edit Bldg Stories** Workspace
2. In the Create/Edit Building Stories field select "New". This initiates the process...Note that a simple square shape has appeared in both the 3d and 2d views
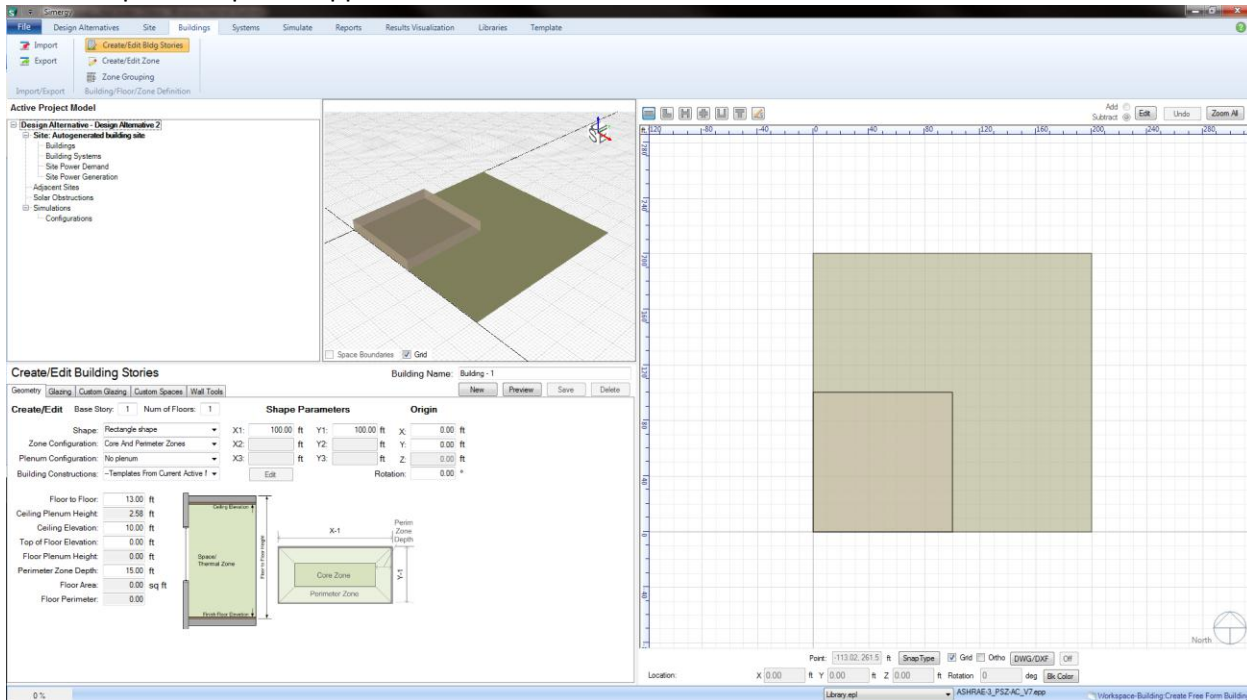
3. Make the following inputs:
    3.1. Building Name - Wild Ferret 1 (every building needs a code name)
    3.2. Shape - L-Shape
    3.3. Num of Floors = 4
    3.4. Origin X = 20, Y = 20
    3.5. X1 = 150 (shape parameters correspond to those shown on the diagram)
    3.6. Plenum Configuration = Above Ceiling (Note how diagram shown changes)
    3.7. We'll accept the defaults for glazing, floor to floor height, and others.
4. Hit Preview - Isn't it Magic! But we aren't done yet...
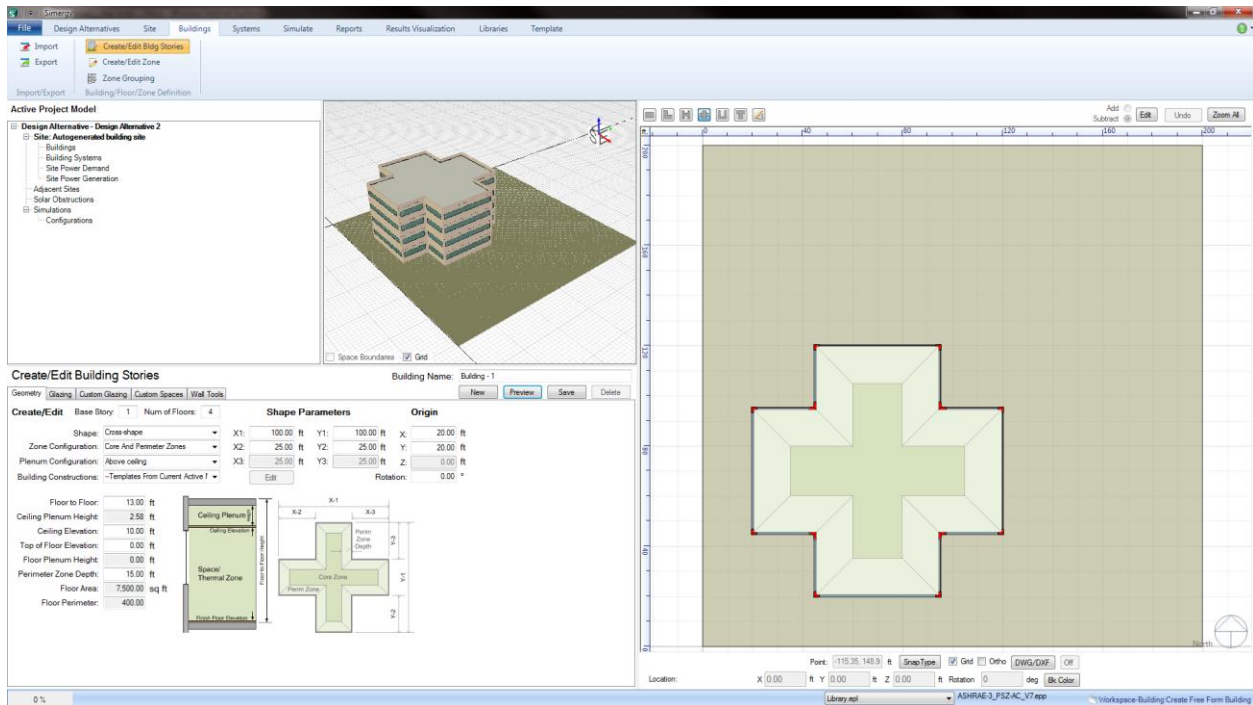
5. Make changes if necessary and select Preview again (rinse and repeat). In our case its perfect, so we can move on.
6. Hit Save. Now the Building is part of the BEM. Note that the since we had the Zone Configuration set to Core and Perimeter we now have lucky 13 spaces on each floor that are shown in the 2d view. Also note that the Create/Edit Building Stories field has gone back to its default setting.
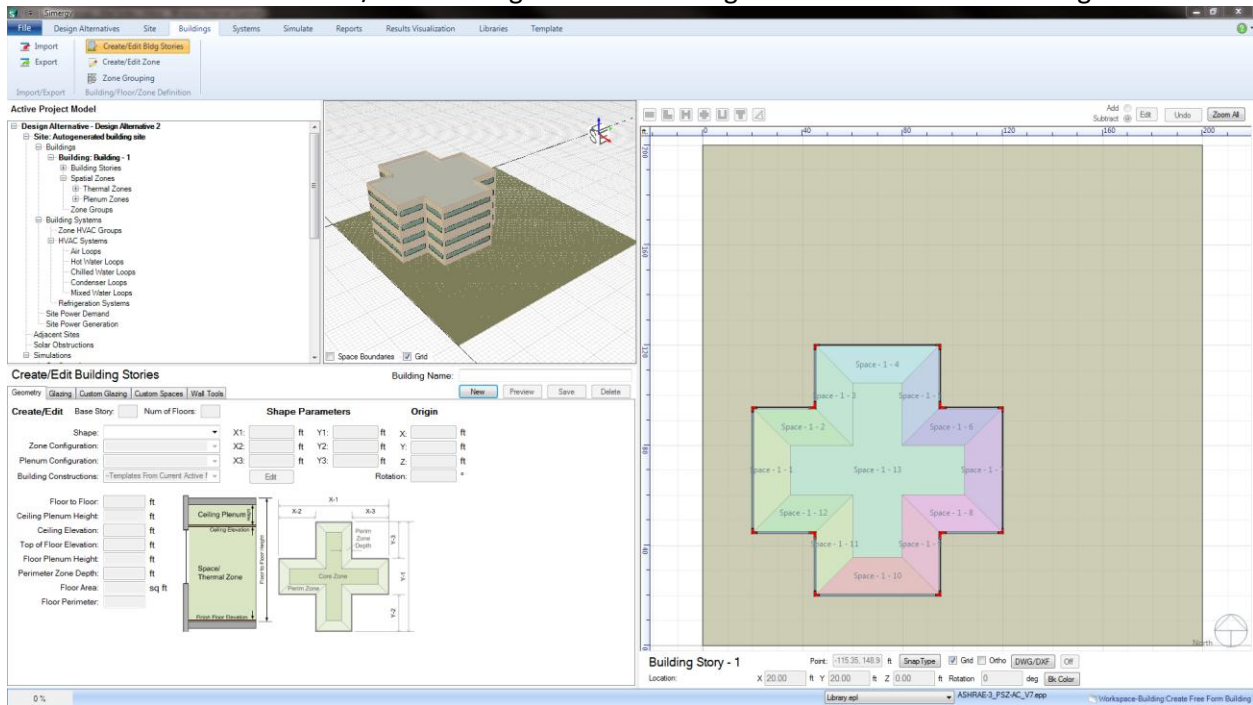
7. Since we had so much fun the first time, let's create another building form.
8. Select New again
9. Make the following inputs:
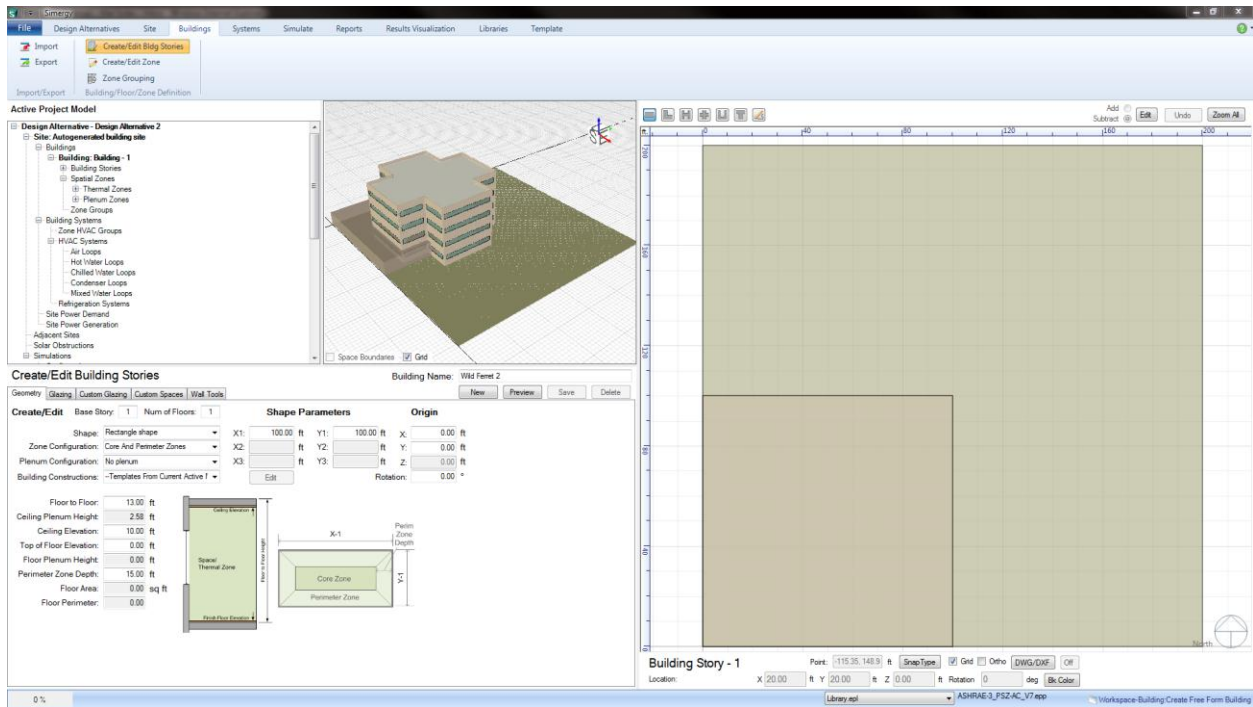
9.1. Building Name = Wild Ferret 2

9.2. Base Story = 5

9.3. Shape = Free Form. Now you'll need to go over to the 2d view and draw a building form for the penthouse
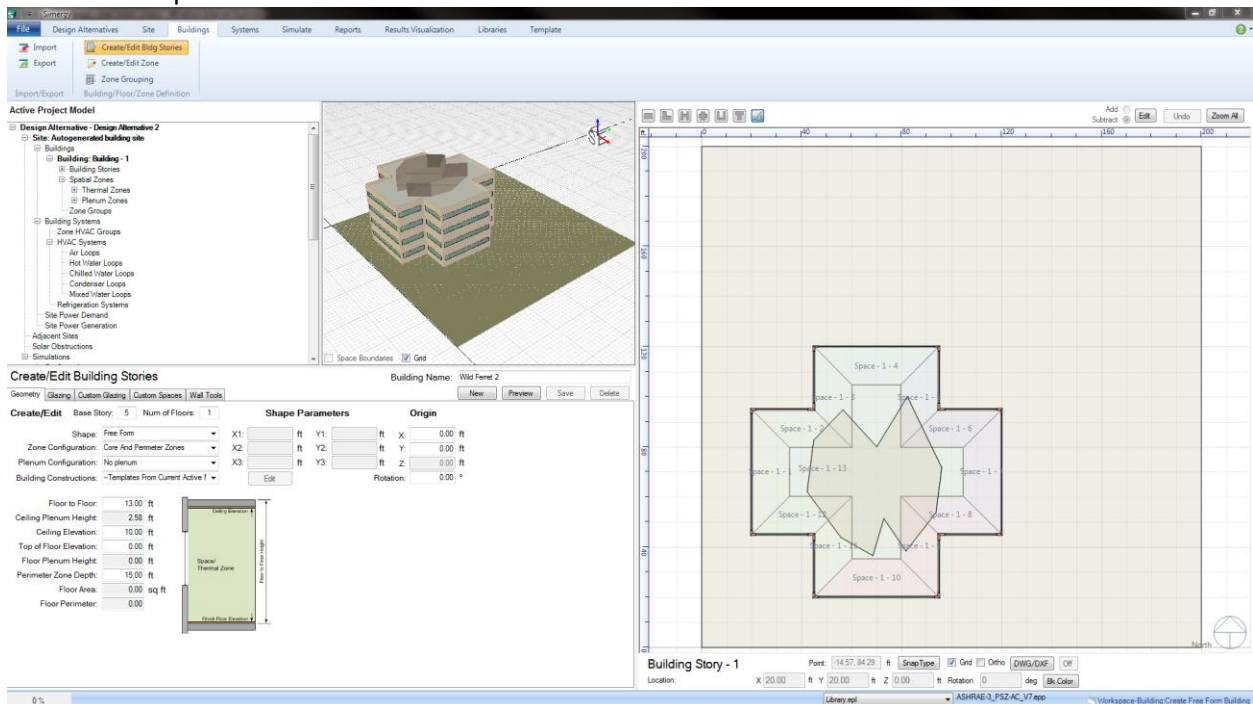

10. Hit Preview

11. Make changes if necessary and select Preview again (rinse and repeat). In our case its still perfect, so we can move on.

12. Hit Save
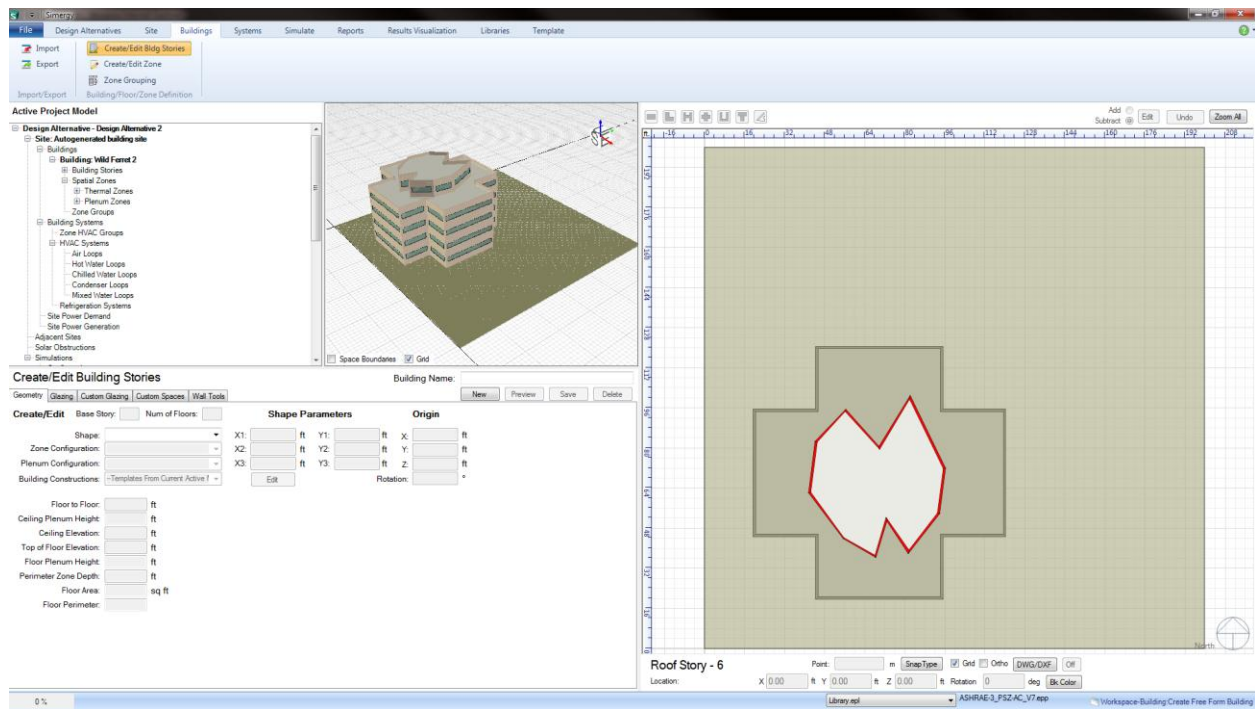
13. Save Simergy File, because although the Building Object is part of the Simergy file, the file has yet to be saved.

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FAQ: How can I move around within the 3d model view?

The 3d view and 2d view appear in a number of workspaces within Simergy, so understanding the controls is "a good thing".

Rotate

To Rotate the 3d view = Hold do the mouse wheel while moving the mouse to the right or left

- Hey, my building is crooked! - Just release the mouse wheel and the building squares vertically.
- I'm not using a mouse! - hold down both buttons on the touch pad while using your other finger of choice on the touch pad to rotate the model

Pan

To Pan in the 3d view = Hold down the right mouse button while moving the mouse to the right or left. Release the right button when you've nailed the desired view.

- Hey, I'm still not using a mouse! = hold down the right button on the touch pad and pan the model by using another finger on the touch pad.

Selection

To make a selection in the 3d view = just position the cursor on the desired component (wall, window, floor, etc) that you want to select and left click

- Come on, I still don't have a mouse = position cursor with touch pad and when in desired location hit left button on touch pad.

Zoom

To dynamically zoom in and out in 3d view = position the cursor inside the 3d view and then use the mouse wheel to dynamically zoom. Moving the mouse wheel towards you zooms out and moving the mouse wheel away from you zooms in.

How Can I Change a Source Library?

There are two main ways to change a Source Library, which is the Library (Database) that dictates what your Library Entry, Templates and other available selections are.

1. **Change the Old-Fashioned Way**
   - Go to File/Options and select Library/Template Preferences from the left column of the dialog box that appears.
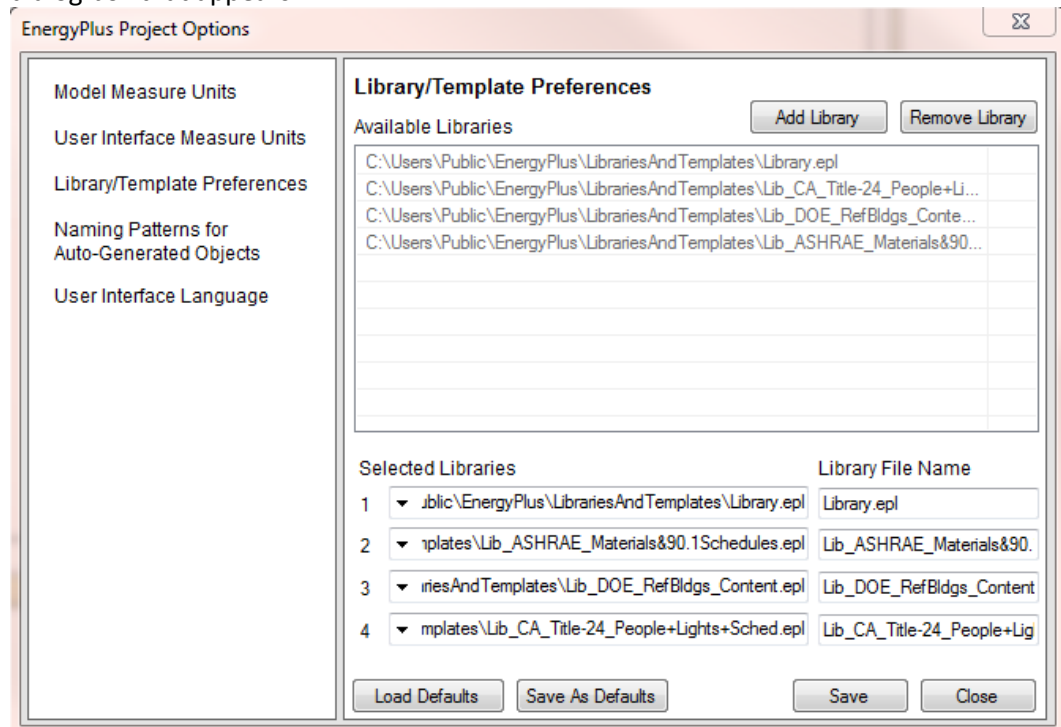
   -
2. **Change on 'the fly' while working in Simergy**
   - Select the Source Library drop down list located on the bottom right border of a majority of the workspaces. This capability allows the user to easily switch the Source Library and incorporate Library Entities from multiple Source Libraries into one Simergy Project.

   -
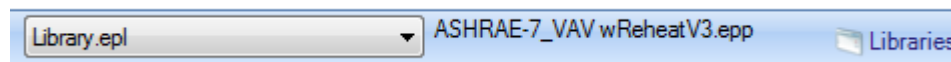
Note: Currently Simergy only allows (4) four Source Libraries to be active within a Simergy model. If the user wants to incorporate more into a project, at the point when they need the additional Source Libraries they will need to go to File/Options, Library/Template Preferences and change out some of the current set of four to incorporate the additional Source Libraries.

Tip: Once a Library Entity is part of a Simergy model it remains as part of that Simergy model even if the Source Library is no longer a part of the Simergy BEM.

FAQ: What if my weather file location is not listed?

Location: Design Alternatives/Select Design Alternatives
In Simergy a weather file can be associated with the BEM by selecting one of the two available options within the Weather Source drop down list for each Design Alternative:

- **Standard** - is the default selection, and allows users to then select a State and City from the drop down lists for each column. The available options are based on the weather database maintained by the National Renewable Energy Laboratory (NREL) for locations in the United States.

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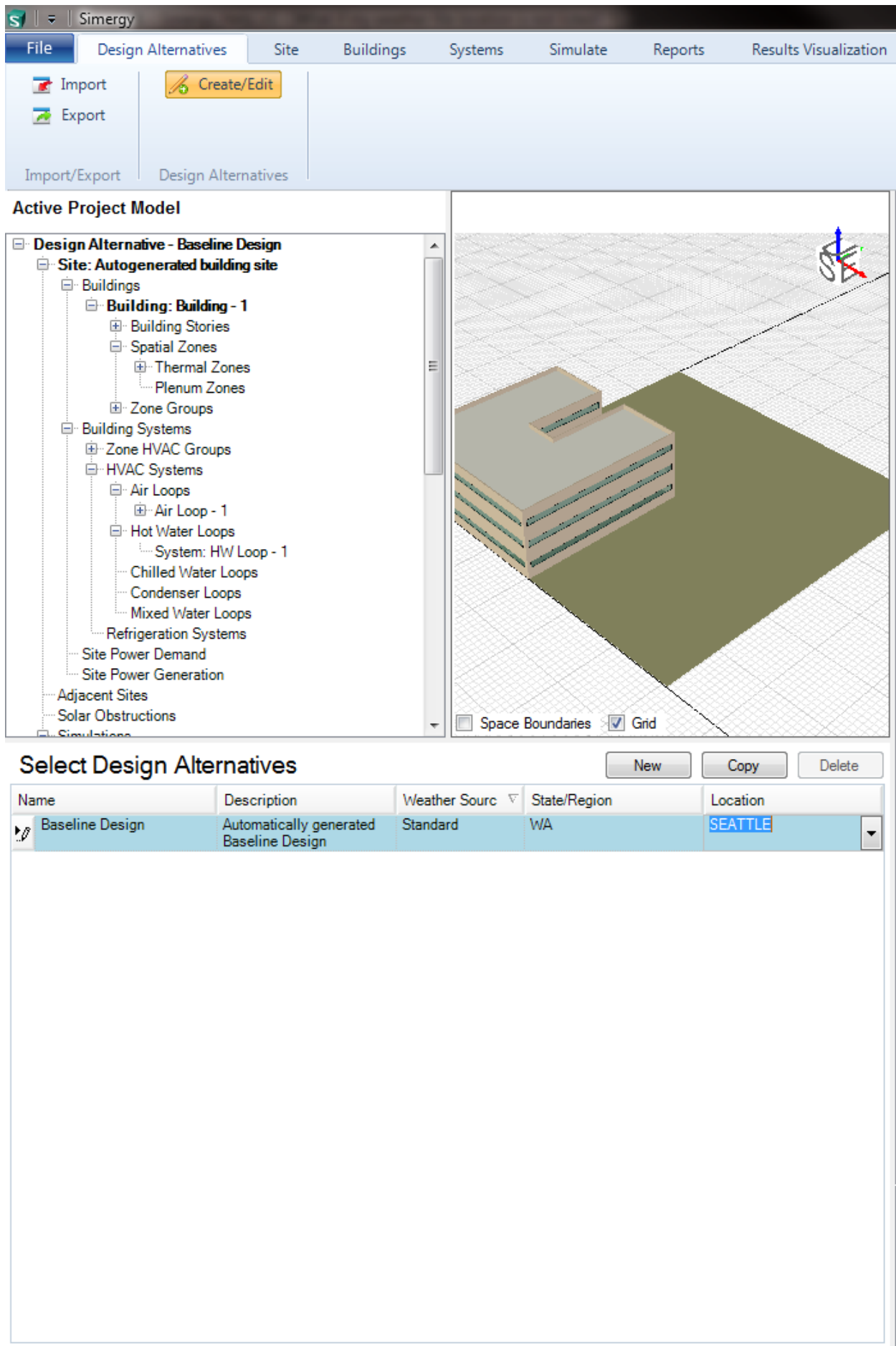
- **Custom** - allows the user to load custom weather files and/or weather files that are not currently included in the database that Simergy accesses, such as international locations. The only criteria is that the weather file is in an .epw format.

When "custom" is selected, <browse> will appear in the next column (State/Region), and the user will need to select that cell to launch the browser to locate the desired weather file
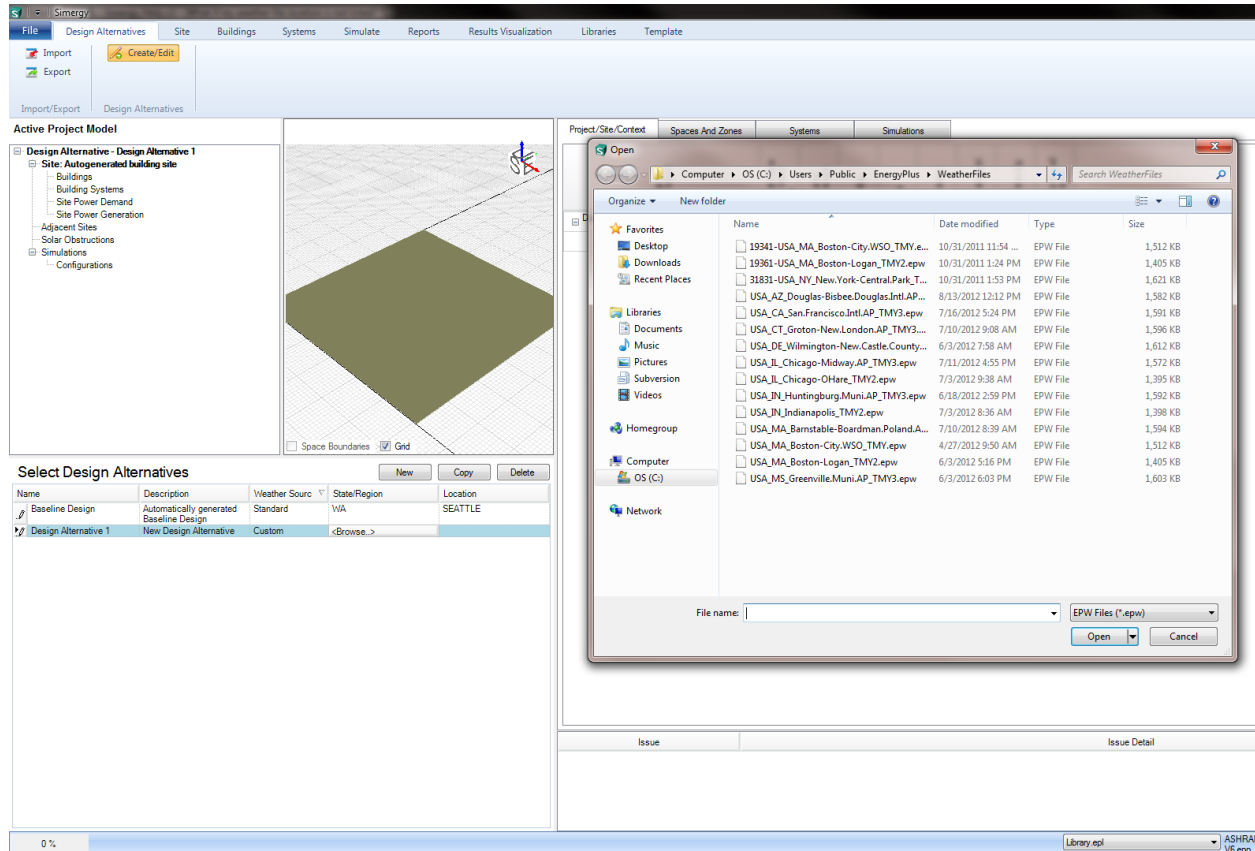
The Weather Converter that is packaged with EnergyPlus (EnergyPlusV7-1-0\PreProcess\WeatherConverter) when it is downloaded can be used to generate .epw weather files.

FAQ: How best to prepare a DWG/DXF file prior to import and how to go about tracing the Geometry?

To address this FAQ we'll use the example of importing a DWG/DXF file and working with it.

Best practices for preparing the DWG/DXF file

- Eliminate as much unnecessary information from the DWG/DXF file as is feasible.
- Explode ALL blocks within the file. *Note: Currently the user is not able to do this within Simergy*
- Remove unnecessary layers
- Become familiar with the layers that are included in the file and identify the layers that are most relevant.

Important: The amount of components, points and really data that are "active" in a DWG/DXF file that is imported into Simergy has a significant influence on computational bandwidth that is utilized by Simergy and therefore on the amount of time ceratin tasks will take to be fully executed. Therefore it is beneficial to have only the layers (data) displayed that are needed to effectively work with the DWG/DXF file. For example, if the DWG/DXF imported file is large in size, then it is very important to only have the layers active that are truly needed.

Importing and Working with the DWG/DXF file

Step 1 - Go to the Buildings tab on a New Project.
Note: The workspace that the user imports a DWG/DXF file on influences where that DWG/DXF will appear. Users can import DWG/DXF files on either the Site Workspace or the Buildings Workspace. In addition the import will be associated with the Design Alternative that is currently selected.

Step 2 - Select DWG/DXF **at the bottom of the 2d Drawing Area**
Step 3 - Browse and Select the desired file.
Once the DWG/DXF file has been selected, a Layers Dialog box will appear and a message stating that the file has been successfully loaded in Simergy.
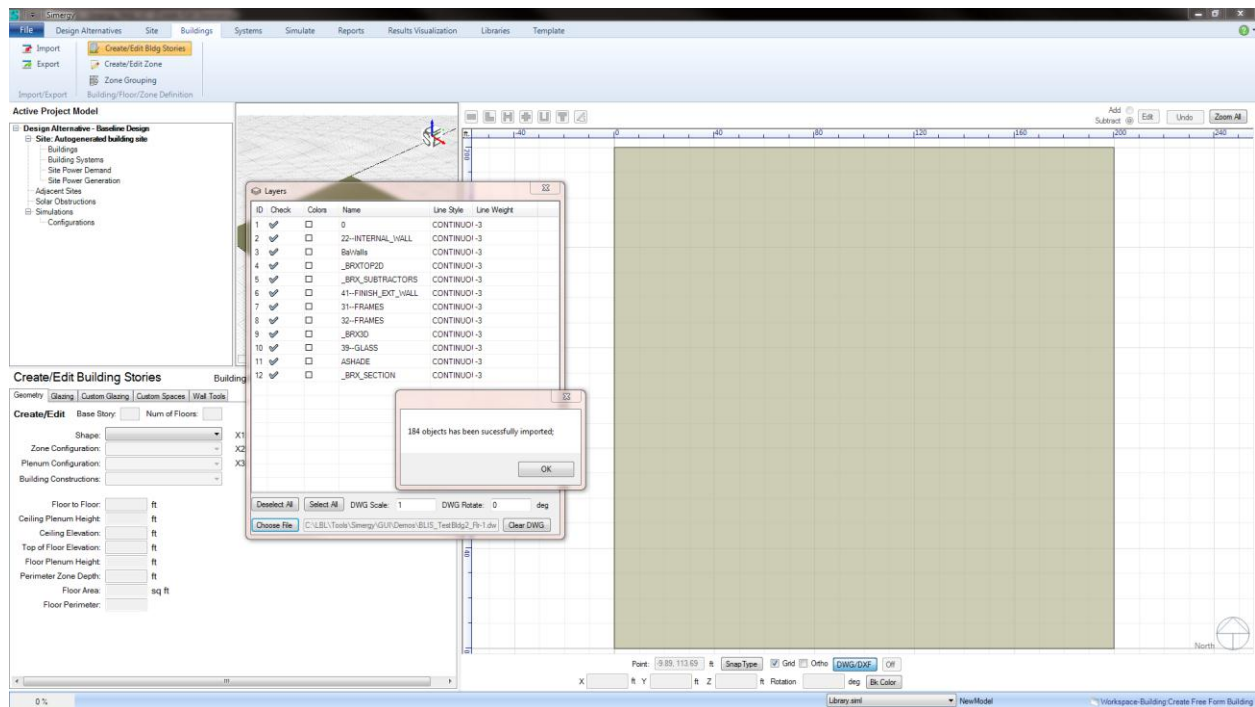
Step 4 - Deselect Layers that are not being used

The user can do this by selecting *Deselect All*. Then they can select individual Layers to turn back on by selecting on the "X", which will then change to a "checkmark".

Tip: Move the Layers Dialog box to the side or to a separate screen because it can remain active while the user is working in the 2D view. One thing this allows is that the user can visualize in the 2D view what is shown and/or removed by selecting different Layers.

When the user is done working with the Layers dialog box they can either leave it open or close it by selecting the "x" in the upper right. The changes are Saved automatically, so no save or update is required.

Tip: If the user wants to return to the Layers dialog box at any time they can just select the DWG/DXF button.
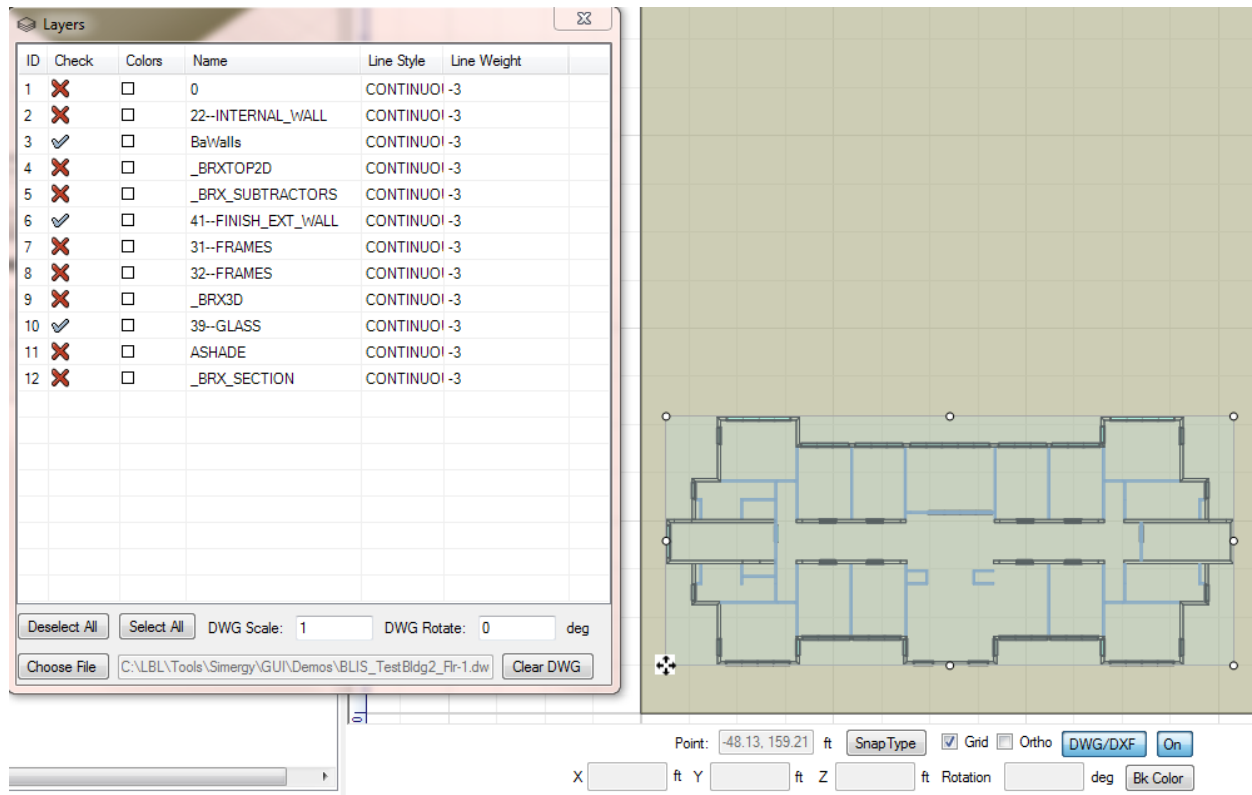
Step 5 - Change the Settings to make the Tracing Process easier

The following are recommended settings if the user is tracing a DWG/DXF that is similar to the one shown to create the BEM Geometry:

- **Deselect Grid** (most likely it is not going to be beneficial to include)
- **Check Ortho** (makes the drawing and selection process easier)
- **Snap Type** - only have End Point and Perpendicular selected
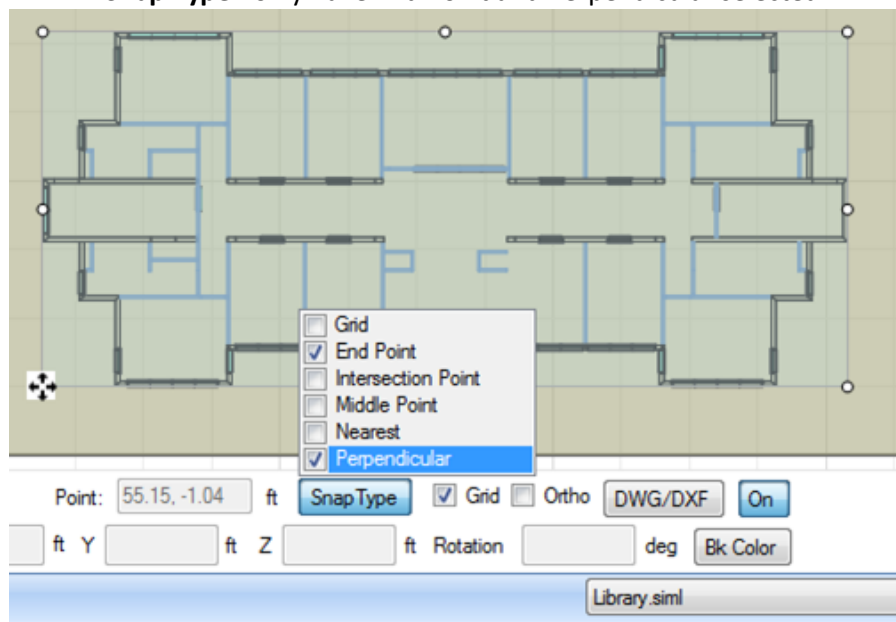
Step 6 - Go to the Create/Edit Building Stories area and Select *New*

Step 7 - In *Shape* drop down list select Free Form. This activates the 2D drawing view.

Note: the user can also make edits and/or selections for any of the other fields, such as Zone Configuration, Plenum, etc.

Step 8 - Select the starting point where the Simergy Geometry will start for walls.

Step 9 - Starting drawing the Geometry

When the user has closed the shape (user connects the last line drawn to the starting point) the geometry will appear in the 3d view
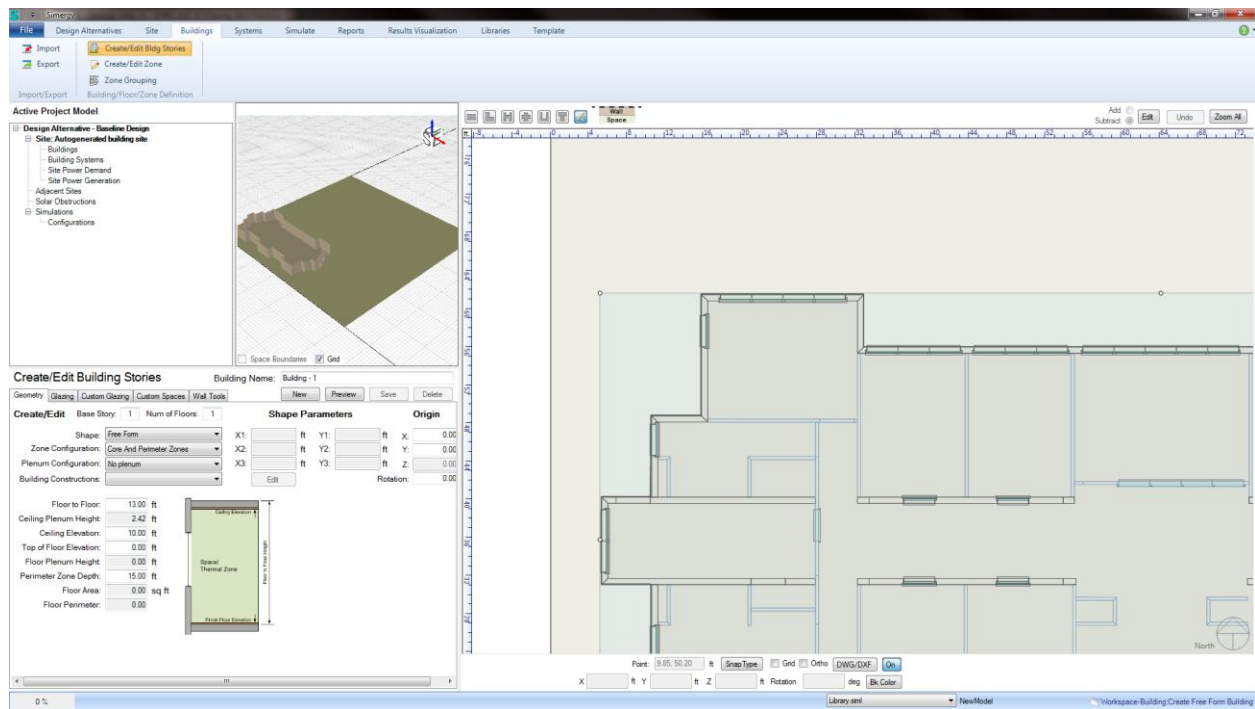
Step 10 - Make any other adjustments as needed and select *Save* in the Create/Edit Building Stories Area.

FAQ: How is a Library and Library Entry Different?

Tip: Some of the semantics within Simergy can be a bit confusing, so it is important to have a clear understanding of some key topics.

A **Library** (referred to as Library Database later) is at the top of the data chain. It is a database that contains libraries, library entries and templates. A Simergy BEM can have multiple Library Databases associated with it, and the user can switch between them by going to File/Options/Library and Template Preferences or the user can select from the Library drop down list typically located on the lower right of each workspace (see Library Setup and Control)

A Library Entry is a subset of the Library Database that has either been assembled and saved by the user or is a default Library Entry that comes with Simergy. There are a significant number of Library Entries that are packaged with Simergy, so that the potential need for the user to go through the process of creating their own is reduced, however it is an option. Within the Templates Workspace Library Entries can be selected to establish Templates.

A key third part of this Data Structure is the Library Database itself, which contains a large amount of data that can be filtered by the user by selecting a Type and Sub Type for the Library Category that they are working in. The result of the filtering process is a table of variables (Libraries Workspace) that may or may not have values associated with them. The user can provide input values and remove variables from the filter set, but this set will not be able to be used on a project unless it is saved as a Library Entry.

Note: Remember that 'A Library' contains Libraries, Library Entries and Templates. A Template can contain Libraries, Library Entries and in some cases other Templates.

FAQ: What are Shapes Components and off-page references?

Shape Components represent HVAC Components within a HVAC system. Simergy currently contains ~200 different component shapes, which are grouped into six main areas of HVAC System Design:
- Zone HVAC Groups
- Air Loops
- Water Loops (Hot Water, Chilled Water, Mixed Water and Condenser Water Loops)

In Simergy the Component Shapes are grouped into 12 stencils that are accessible to the user in the Diagram Workspace for Zone HVAC Groups, Air Loops and Water Loops on the Systems Tab. Each workspace contains two shape stencils. One for the component shapes and one for the controls and sensor shapes.

Appearance: The overall appearance of the component shapes is intended to look familiar to engineers and energy modelers, because it is working to be representative of the engineering drawings that they are typically creating and/or analyzing for projects. However, where the drawings imply integration within Simergy it is required.

The shapes are used to build and/or edit the loops, which are representative of typical engineering loop diagrams.
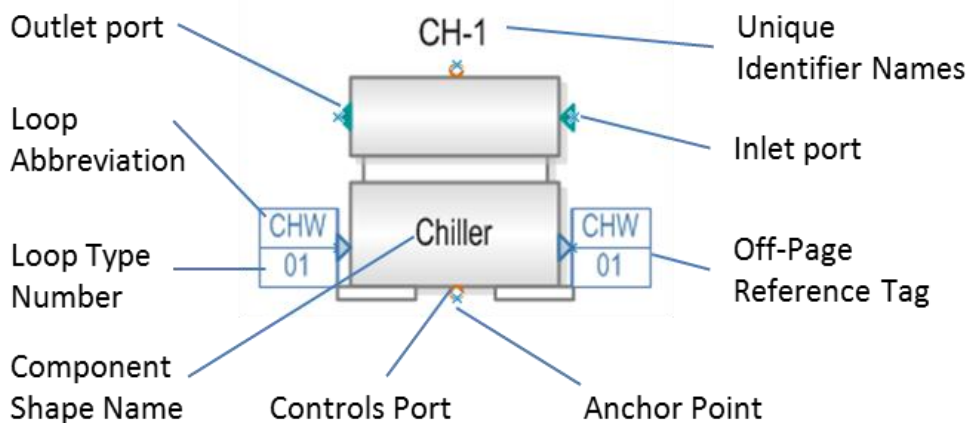
The different parts of the component shapes are described in detail here.

Off-Page Reference Tags: An important part of the HVAC System design framework are the off-page reference tags and the role they play in integrating the HVAC System Air and Water Loops. They also allow the user to track and review the different parts of the HVAC System design. Off-page references are used on shapes that are required to be linked to a different type of loop. For the example shown above this Chiller component shape would be the one the user would see located on the condenser loop. The off-page references indicate that it needs to be linked to a chilled water loop. By default the off-page references will be displayed with the required Loop abbreviation on top (in this case CHW = Chilled Water) and a Loop Type Number on the bottom (default = 00). The user can tell when the component shape has been linked when the Loop Type Number is another number besides 00.

To assign the component shape to another loop the user needs to go through a few steps:
1. Make sure the other loop type has been set up. In this case, a Chilled Water Loop.
2. If this hasn't been done the user would go to the Systems/Water Loops/Create Edit workspace and add a water loop.

3. Then they would select the water loop type (Chilled Water), and select an appropriate template to set up the loop
4. Once the Chilled Water loop has been set up, return to the Condenser Loop
5. Select the Chiller Shape Component
6. Look to the Component Shape Properties field on the lower left side of the workspace.
7. Under Selected Component Information there should be a line item titled Chilled Water Loop. Select the Chilled Water Loop that you just created from the drop down list.
8. Now the Chiller Shape component is linked to the Chilled Water loop, which is indicated by the Loop Type Number on the off-page reference tag changing to '01', if that is the only chilled water loop that is part of the model.
9. In addition, you can return to the chilled water loop and you will see a representative shape with an off page reference showing a link back to the condenser loop.

FAQ: Does Simergy have an Undo Command?

Location in Simergy User Interface: ALL

Short Answer = No. The user can either delete, redraw, or abandon individual or sets of commands.

Long Answer - The mindset needed to effectively use Simergy is to constantly think forward. If the user makes a move they do not wish to have included they need to either delete it or not save the current moves in the workspace. It is important to understand how different commands can be deleted and/or a recent set of commands can be abandoned, which in and of itself is like 'undo-ing' the command(s). Some examples of ways to delete different objects include:

- Site, Building and HVAC components can be selected in the 3d view (if available) and 2d view and deleted. In addition, they can be highlighted in the Project Component tree, right click to access commands, and select delete.
- Zone HVAC Groups, Air Loops and Water Loops can be selected in the Systems/Create/Edit Workspace in table and then select the *delete* button. *Note: If a Zone HVAC Group or Air or Water Loop is already connected to another loop that connection will need to be severed prior to being able to delete the Zone HVAC Group or Water or Air Loop.*
- Shape components can be selected in the diagram view of ZoneHVAC Groups, Air or Water Loops and deleted by selecting delete from the key board.

Some examples of ways to reverse different sets of moves include:

- If the user has created a library entry that they wish to delete, they can just select the library entry from the drop down list and then select *delete*. Another option is the user could change the previous selections and then select *Save* to override the previous incorrect selections.
- If in the *Profile Editor* on the Libraries/Schedules workspace and the user has started drawing a profile that they have drawn incorrectly, they can select *Redraw* to start again.
- In a number of different workspaces the user can abandon a set of incorrect commands by selecting to go to a different workspace and not saving the previous commands. *Note: the user should be prompted to either save or not save the previous commands for the different workspaces. Some of the Systems workspaces, like the diagram workspaces, save each move/command that the user does, and even if they leave the workspace when they return they will be taken back to the 'exact state' that they left the workspace.*

FAQ: What can the project component tree be used for?

Location: Multiple Workspaces in Simergy. Typically located in the upper left side of the workspace.
The following are a sampling of the 'Tree Capabilities' within different workspaces. We encourage users to identify others!

General Right Click Capabilities

At any point within any workspace a user can highlight a component on a tree, right click and gain access to:

- **Selections of the parent, child, and/or other children** related to the component that is selected. This allows the user to refine the selection easily by going to a more detailed or higher level, and keeps the user from having to spend time trying to position the 3d model view 'just so', so that the desired component can be selected.
- Additional options: *Isolate the selected objects* or *Hide*

Component Type Specific Right Click Capabilities

The next set of capabilities depend on which type of component the user selects. Detailed explanation of capabilities provided on links. By selecting Edit or Diagram the user is taken to the workspace that is needed to accomplish that based on the component they have selected.

Tip: This can be very useful when you are trying to maintain multiple loops on a project. The user can highlight the desired loop on the tree, right click and select edit system, which will take them to the diagram workspace. This saves the step of having to go to the create/edit workspace and then the desired loop to make it active.

- Geometry Related - Edit, Delete, Properties
- Thermal Zone or HVAC system related - Diagram System, Edit System, Delete, Properties.

FAQ: How can I build a schedule?

Location: Libraries/Schedules
Video: Libraries - Schedules and Calendar

In Simergy a schedule is defined as a full calendar year of days each with a schedule profile assigned to it. Schedules are viewed, built and edited in the Libraries Schedules Workspace. To build a schedule the user needs to do the following steps:

1. Select a Schedule Type from the drop down list (top of image).
2. Select a Schedule Name (Schedule sub type) to work with or create a new one.
3. Select a Special Days Calendar to associate with the Schedule (*Note: this action is not required*).
4. Draw a profile in the Graphic Profile Editor (bottom left on image) and Save it.
5. Once a Schedule Profile has been saved it will appear in the Profile Workbook (middle left).
6. Once the user has the desired Schedule Profiles in the Profile Workbook then can begin the process of dragging and dropping the Profiles onto the Year Schedule Workbook (right side).
    Note: There are numerous drag and drop features allowing capabilities ranging from applying one Schedule Profile to the entire year (drag and drop to the year shown in upper left corner of Year Schedule Workbook) to applying Schedule Profiles to single days. It is beneficial to review the options in the Schedules section.
7. Enter a name in the Schedule Name field and hit Save. The schedule will now be available in the Schedule Name drop down list for the Schedule type that it is associated with. *Note: A schedule cannot be saved unless a Schedule Profile has been associated with every day of the year*.
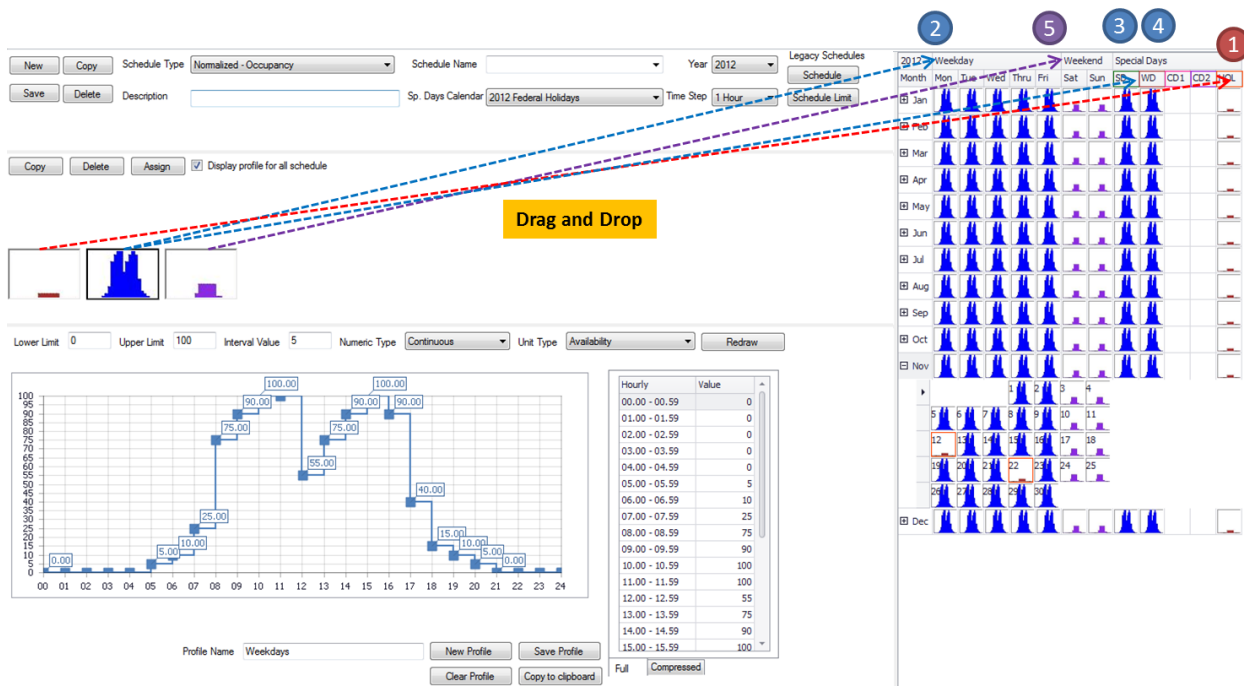
The example above shows how with five (5) drag and drop moves from the Profile Workbook to the Year Schedule Workbook can set up the profiles for the entire year for a schedule. Now all that is left for the user to do is to enter a *schedule name* and hit *save*.

- Drag and drop - the user can select a profile image and then drag it over to the desired location on the Year Schedule Workbook to apply it. Note: there a number of ways that the user can drag and drop the profile onto the Year Schedule Workbook:
    - Apply to the year - drag and drop to the year label on the upper left corner of the Year Schedule Workbook
    - Apply every weekday - drag and drop to the weekday header
    - Apply to every weekend - drag and drop to the weekend header
    - Apply to every Tuesday for the year - drag and drop to the Tuesday header
    - Apply to every Tuesday within May - drag and drop to the cell for Tuesday in May if the month is not expanded
    - Apply to a single day - drag and drop to the specific day.

FAQ: How can I edit a single window?

Tip: If you make a selection in the 3d view in one workspace when you move to another workspace the selection will still be displayed and active.

- The easiest way to edit a single window is by using the 3d view to make the selection.
- While in the Buildings workspace, zoom in on the desired location in the 3d view and select the wall that the window is a part of
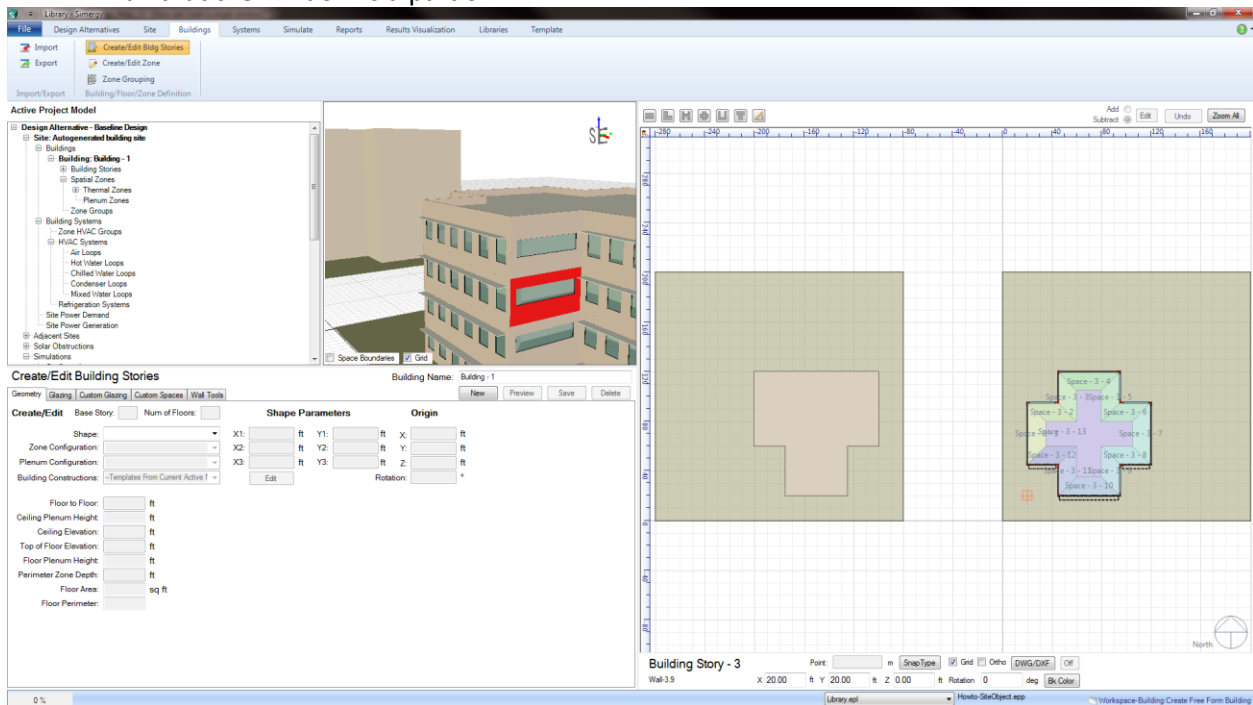
- In the Create/Edit Building Stories field select the Custom Glazing Tab
- If a Wall (Set) is not listed in the field and a 2d diagram of the wall is not being shown below, select the wall in the 3d view again.

- Now select the window in the 2d diagram.

- A set of interactive dimensions will now appear allowing the user to directly make edits to change the:
  - top elevation of the window
  - height of the window
  - distance from the wall
  - overall length of the window.
- After edits are complete, hit Save and the model is now updated.
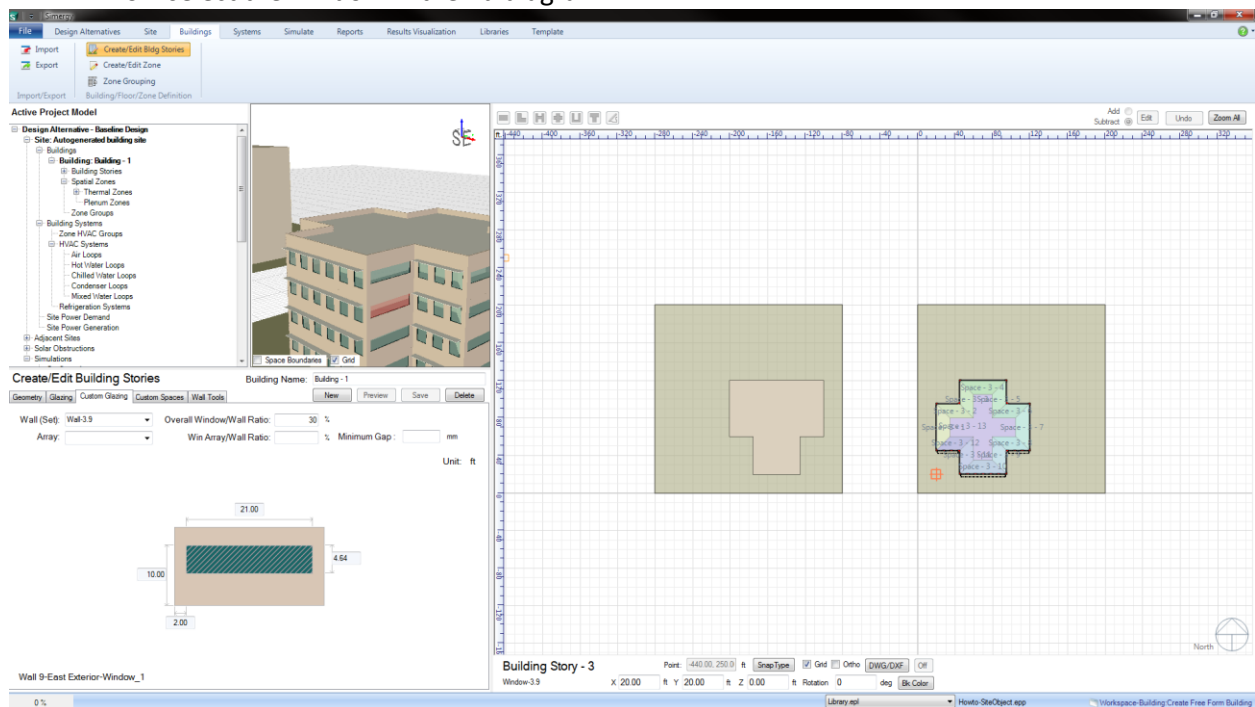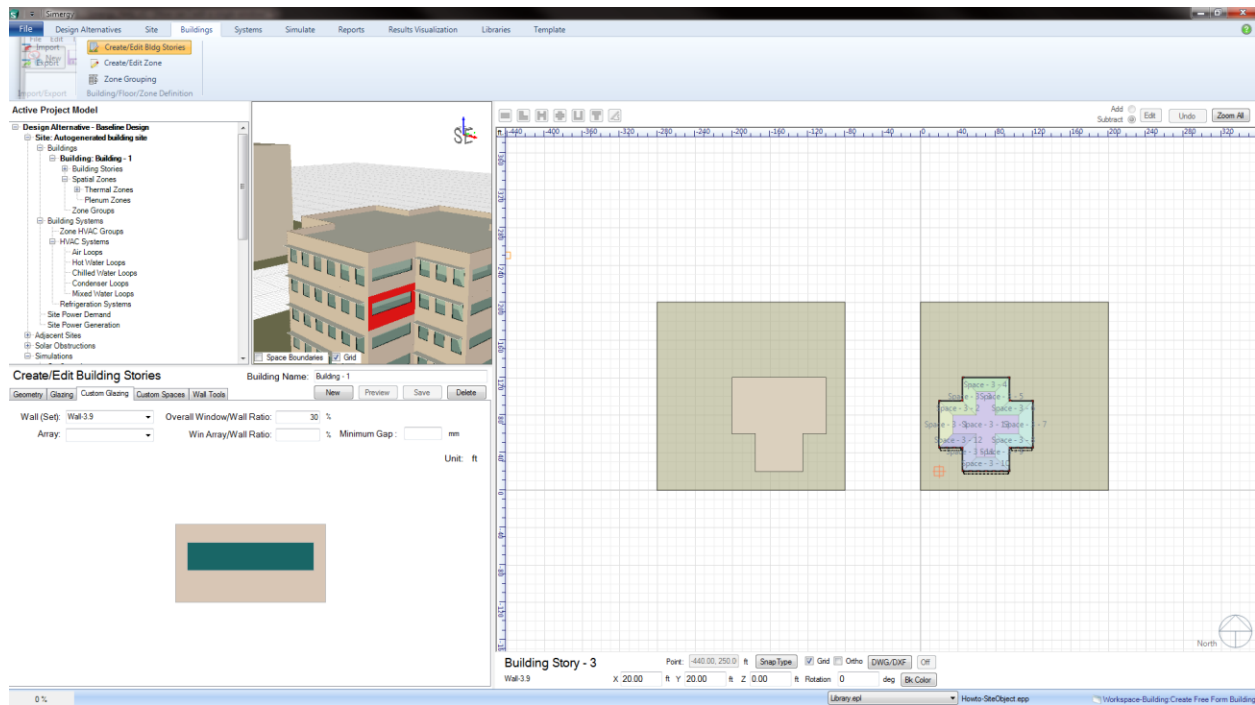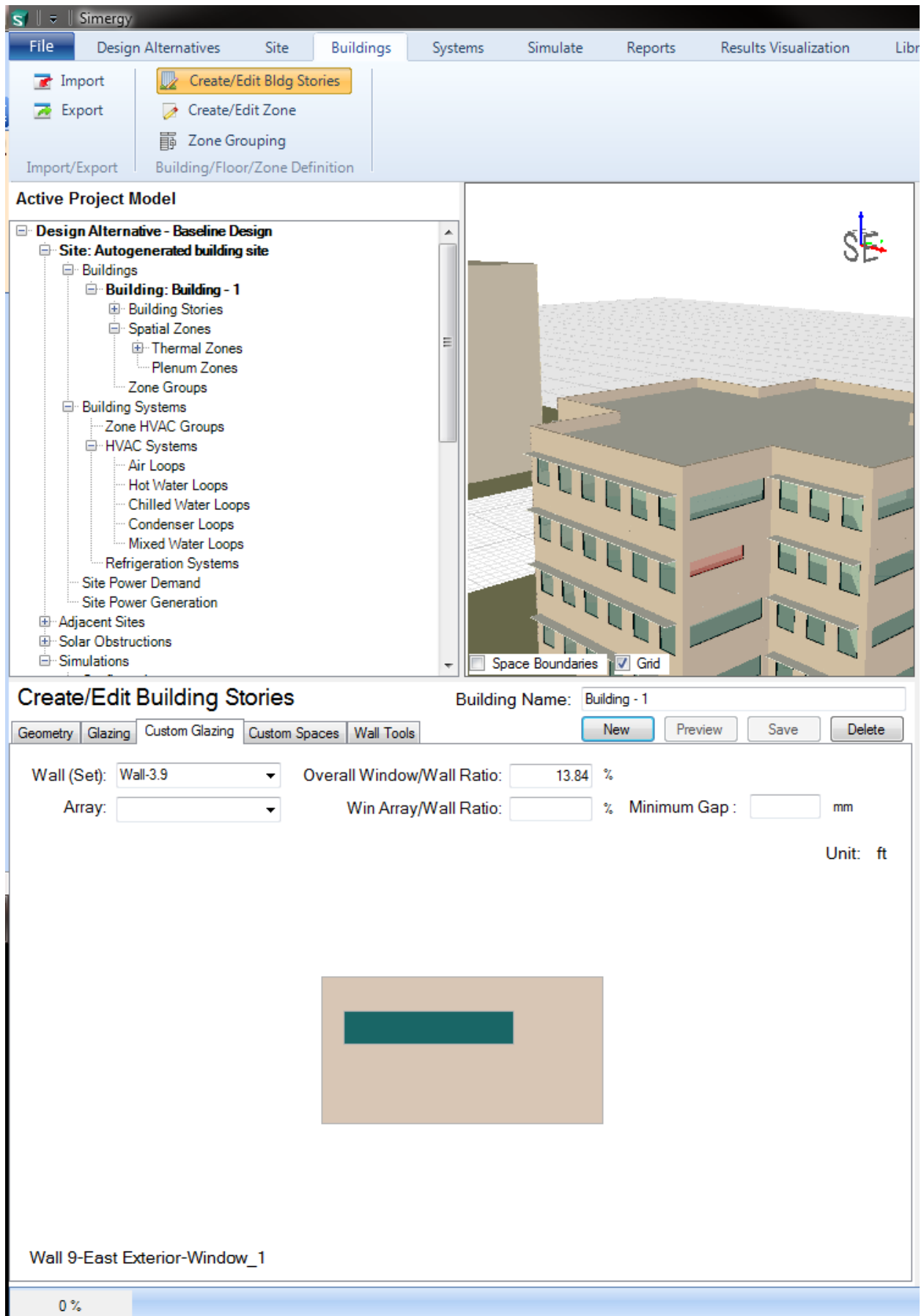
Tip: There are a number of editing capabilities in custom glazing, so it is worth spending some time getting familiar with them.

What is the difference between the Systems Create/Edit and Diagram Workspaces?

The simple answer - The Create/Edit Workspace is where the user sets up and assigns things overall, and the Diagram Workspace is where the user can customize things at the individual component and parameter level.

The somewhat longer answer -
The Systems Create/Edit Workspace features vary based on the Systems Workspace selected, but for the Water Loop example shown, it allows the user to:
- Create New and Edit Water Loops
- Select the Loop Type
- Apply a Water Loop Template
- Preview the selected Water Loop Template
- Assign Loop Level Parameters
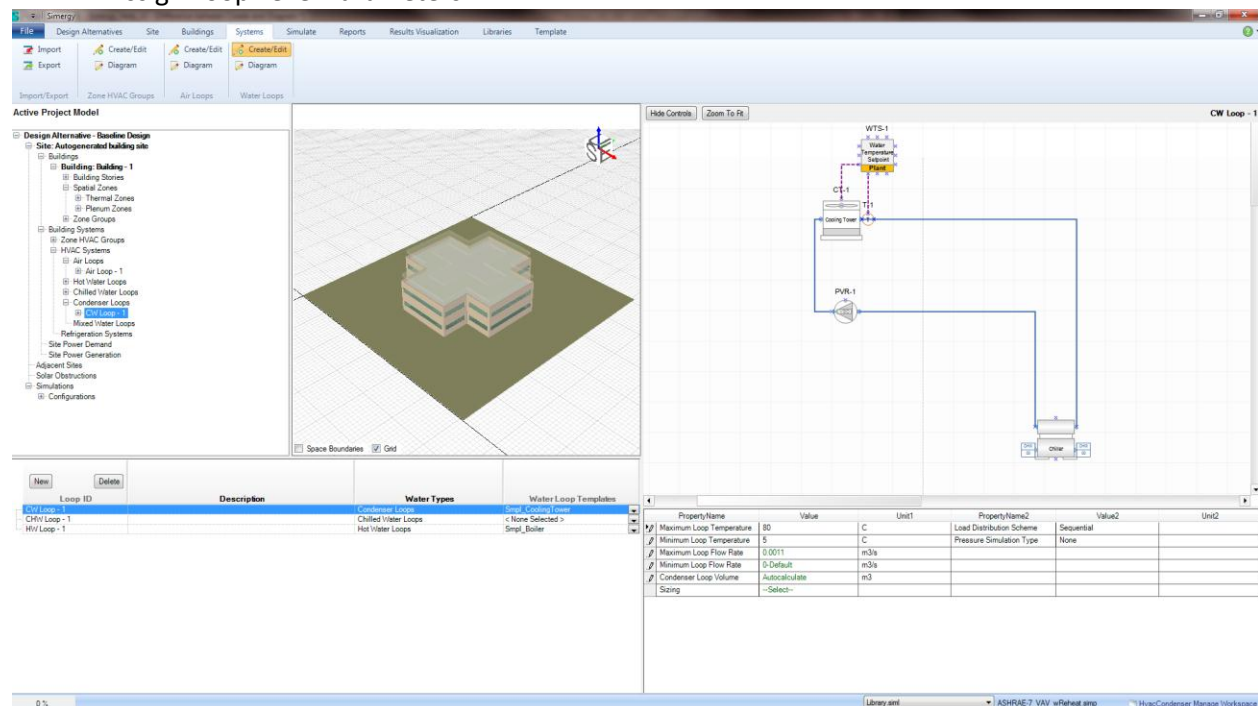
The Systems Diagram Workspace features also vary based on the Systems Workspace selected, but for the Water Loop example shown, it allows the user to:
- Edit the Water Loop Template by dragging and dropping in new Component Shapes from the Stencil
- Change the individual component Library Entities
- Assign the individual component to another Water Loop
- View/Edit properties of the individual components by selecting them and diving into the properties
- Hide the Controls components
- Set the Loop Level controls for Plant Operation Schemes

- Set the Loop Level controls for Availability Managers
- Set the Loop Level controls for Demand Managers
- a number of other things...
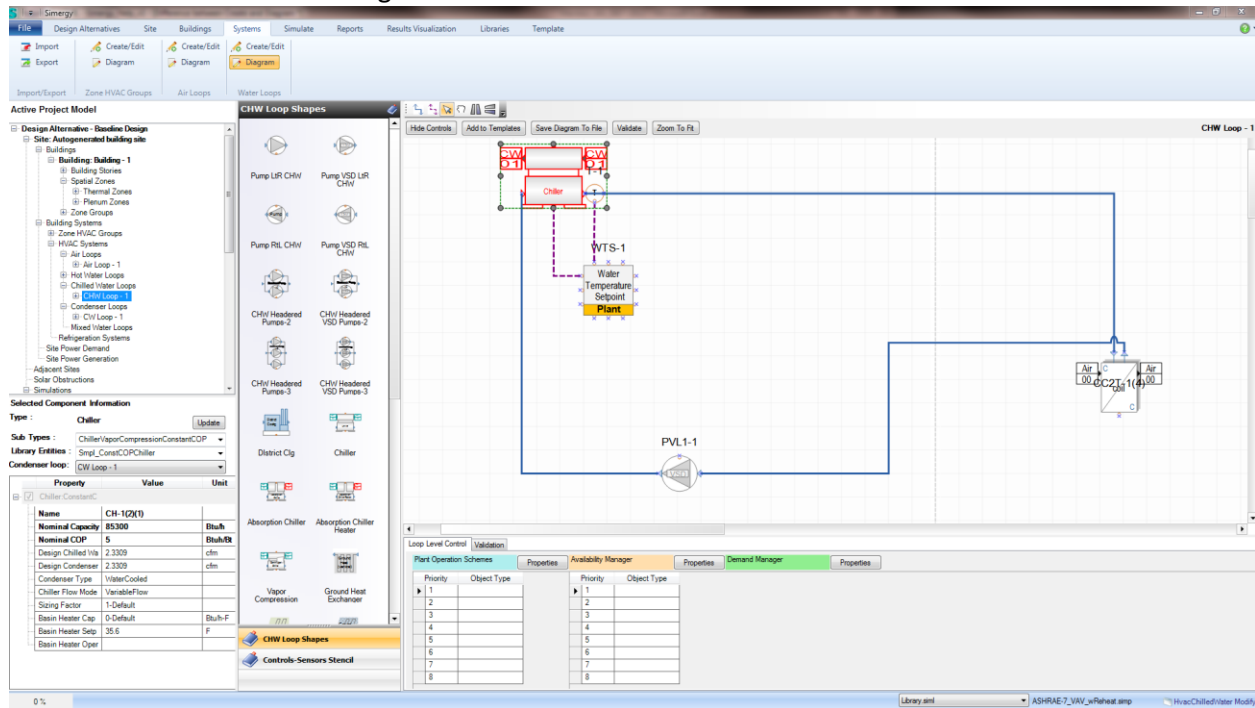
What System/Loop Level Controls are Required?

Required Loop Level Controls

The following are required controls for a Simergy and EnergyPlus simulation to run:

- **Air Loops** - An Availability Manager is required
    - *Note: for Water Loops the Availability Manager is optional*
- **Water Loops** - A Plant Operation Scheme (also referred to as a Plant Equipment Operation Scheme) is required for each water loop (HW, CW, MxW or CHW) that is part of the project.

What are System Level Controls (also referred to as Loop Level Controls)?

Some controllers within EnergyPlus provide broader control of loops and plants, and therefore do not fit directly within the 'loop diagrams', because they are related to multiple components versus a single component and they represent a higher level of control.

Simergy capabilities for System/Loop Level parameters and controls are located in both the Create/Edit and Diagram Workspaces for Air and Water Loops.

PropertyName	Value	Unit1	PropertyName2	Value2	Unit2
Maximum Loop Temperature	80	C	Load Distribution Scheme	Sequential	
Minimum Loop Temperature	5	C	Pressure Simulation Type	None	
Maximum Loop Flow Rate	0.0011	m3/s			
Minimum Loop Flow Rate	0-Default	m3/s			
Condenser Loop Volume	Autocalculate	m3			
Sizing	--Select--				
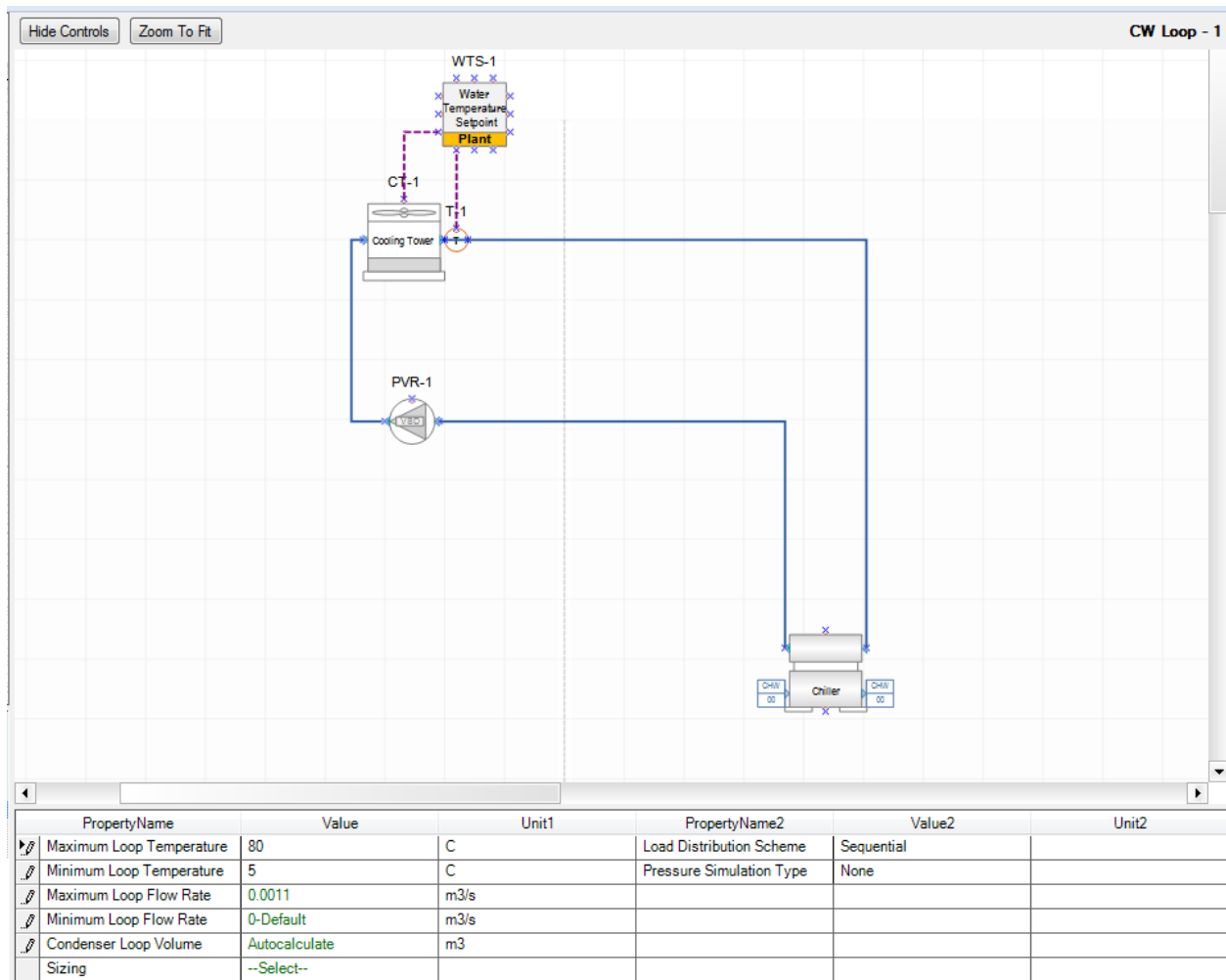
A view of the Water Loop Create/Edit Workspace for a Chilled Water Loop. The System Level parameters are located in the table at the bottom.
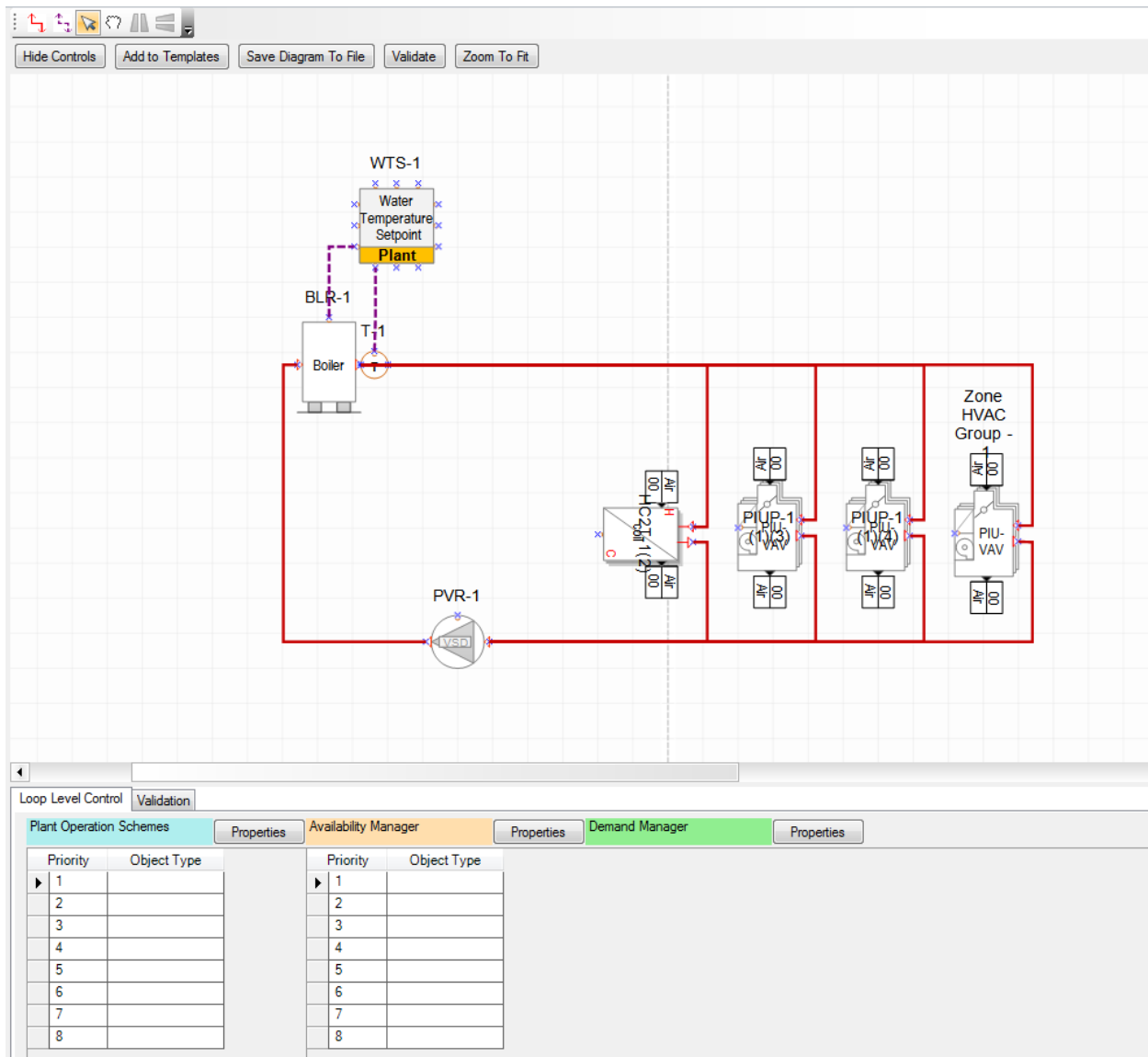
A view of the Water Loop Diagram Workspace for a Hot Water Loop. The Loop Level Controls for the types Plant Operation Schemes, Availability Manager and Demand Manager are located at the bottom. Selecting the properties button for each will access a dialog box allowing more detailed information to be entered for each type. See System Level Controls.

FAQ: What is a Zone HVAC Group?

A Zone HVAC Group is a subset of the Air Loop. It is a set of components that shape the **demand side** of the Air Loop design. The user can select or select and edit Zone HVAC Groups that are included with Simergy or they can be built from scratch in the Template, Zone HVAC Workspace and saved as a template which can be selected by the user to associate with the Air Loop on the Systems/Air Loops/Create and Edit Workspace. The Zone HVAC Group can represent a single thermal zone or a larger set of thermal zones.   The Zone HVAC Group allows the user to set up and visualize the components for the sensor types, incorporate different types of **zone equipment** and **establish priorities** for the zone equipment.   In addition, the user can establish groups for different types of components, which also can save time in set up and simply the view of the system design as well.
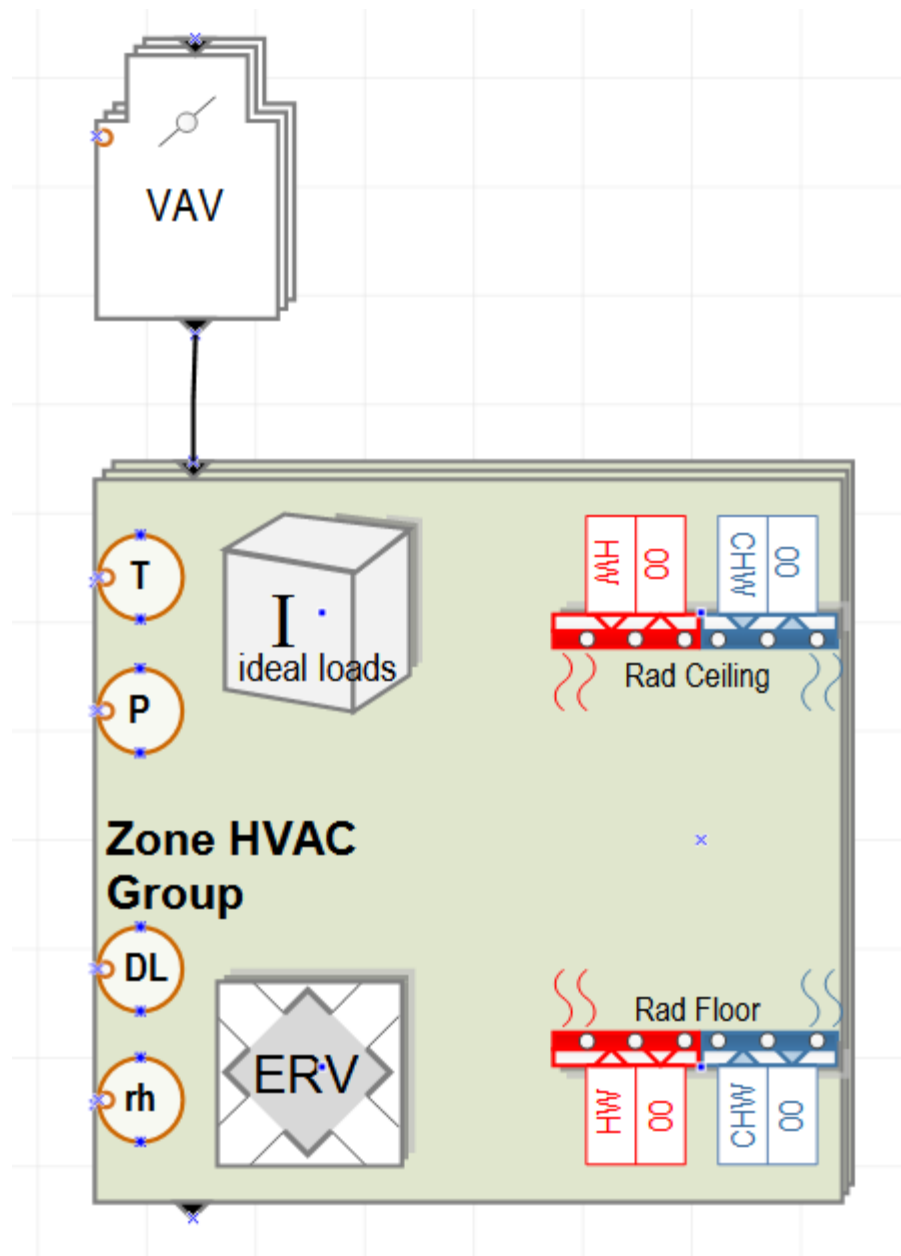
The Zone HVAC Group Shape has a number of important parts:

- **Connection/Anchor Points** - there are a number of "blue Xs" located on the shape that enable easier placement of Zone HVAC equipment component shapess, sensors and loop connections
- **Zone HVAC Equipment** component shapes can be added in any of up to five positions (connection/anchor points) within the Zone HVAC Group Shape and they can also be associated outside the shape (VAV Air Terminal unit shown above). In addition supply and return plena and control shapes are other types that can be associated with Zone HVAC Groups.
  - Note: For the full picture of what component shapes can be associated with Zone HVAC Groups see the Zone HVAC Group and Controls Stencils in the Templates/Zone HVAC Groups workspace or the Systems/Zone HVAC Groups/ Create & Edit workspace.
- **Sensors** can be added in any of up to four positions along the left edge of the shape

- **Air Inlet and Outlet Ports** identify locations where Air Loop Connectors can be added to the shape and the Connection Points make it easier to make those connections

FAQ: What is the difference between a Zone HVAC Group and a Zone Group?

Short Answer: Both Group Types are comprised of thermal zones, but each utilizes those thermal zones in very different ways.

- A Zone Group is a set of thermal zones that can have Zone Templates associated with it for Zone Construction, Zone Conditions, and Zone Loads and Daylighting. Effective use of Zone Groups can significantly reduce the time of the BEM input process.
- A Zone HVAC is a set of thermal zones that have a Zone HVAC template associated with it, which represents the set of zone equipment required to establish the demand side of the air loop. The user can also establish the heating and cooling priority for the equipment within the Zone HVAC Group. Effective use of Zone HVAC Groups can significantly reduce the time and complexity of an HVAC system design.

FAQ: How to Create an Output Request Set

Related: Creating an Output Request; Creating an Output Request Sets

There are three key steps:
1. Create the desired Output Requests (Libraries/Controls and Performance Data/Output Request)
2. Create the Output Request Sets (Templates/Data Templates/Output Request Sets)
3. Assign Output Request Set to Simulation Configuration (Simulate/Setup-Run/Configuration Table)

Creating a Single Output Request

Key steps include:

1. User should identify the Object, Type and Sub Type they are interested in developing an Output Request Set for.
2. Make these selections from the Object, Type and Sub Type drop down lists. When complete Output Variables will appear in the Output Library
3. Select the checkbox next to the desired category on the EnergyPlus tab, which makes the Output Variables active
4. Make Output Variable selections and include relevant additional information (value, frequency, etc)
5. Enter a Library Entry Name
6. Select Save. The Library Entry name is now an option on the drop down list

Creating an Output Request Set

Key steps include:

1. Assemble the set of Object Class, Type and Sub Types combinations that are desired (accompanying spreadsheet recommended)
2. Go to Templates/Data Templates/Output Request Sets Workspace
3. Make selections for each of the combinations of Object Class, Type and Sub Types and select *Add to List*. The Output Variable is now added to the Output Request Sets table.
4. Once all Output Variables are added to list, enter *Template Name* and select *Save*.

Assign to Simulation Configuration

Key steps include:

1. Highlight the desired Simulation Configuration and/or Select New
2. Select the desired Output Request Set from the drop down list in the Request Set column

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## FAQ: How do users link Components to different types of Loops?

To establish a link between a component and an air or water loop the user must be in the Diagram Workspace of either Zone HVAC Groups, Air Loops or Water Loops. The following outline the key steps required within each workspace. Users are also encouraged to review those Simergy Help Sections as well.

Zone HVAC Groups Diagram Workspace

Note: There are only a few scenarios where the user will link components to Loops within the Zone HVAC Diagram workspace, such as for Radiant Shapes (Radiant floor, Radiant ceilings). In the case of Air Terminal Units associated with Zone Groups, it is easier for the user to link these to water loops from the Air Loop Diagram Workspace (see below).

1. The user needs to make sure that the types of water loops (HW, CW, CHW or MxW) have been created within Systems/Water Loops/Create-Edit and System Templates have been associated with them making them available for selection.
2. Select the desired Zone HVAC Group and go to the Diagram workspace (select from Create-Edit table or select from component tree)
3. Select the Component Shape that requires the Water Loop link(s). These are the component shapes with off-page reference tags (see Radiant Floor shape). The component properties area (lower left) will become active.
4. Select the desired Water Loop to connect to from the drop down list within the component properties area (Field <Water Type> Loop). In this scenario the user is to select a CHW Loop and a Hot Water Loop.
5. Select Update.
   Result - The Component has been linked to the Water Loop(s) and the off-page reference tag has been updated to show the number of the Loop Type that has been connected. If the user goes to that Water Loop they will see a representation of the component shape incorporated into that loop with off-page references back to the Air Loop.
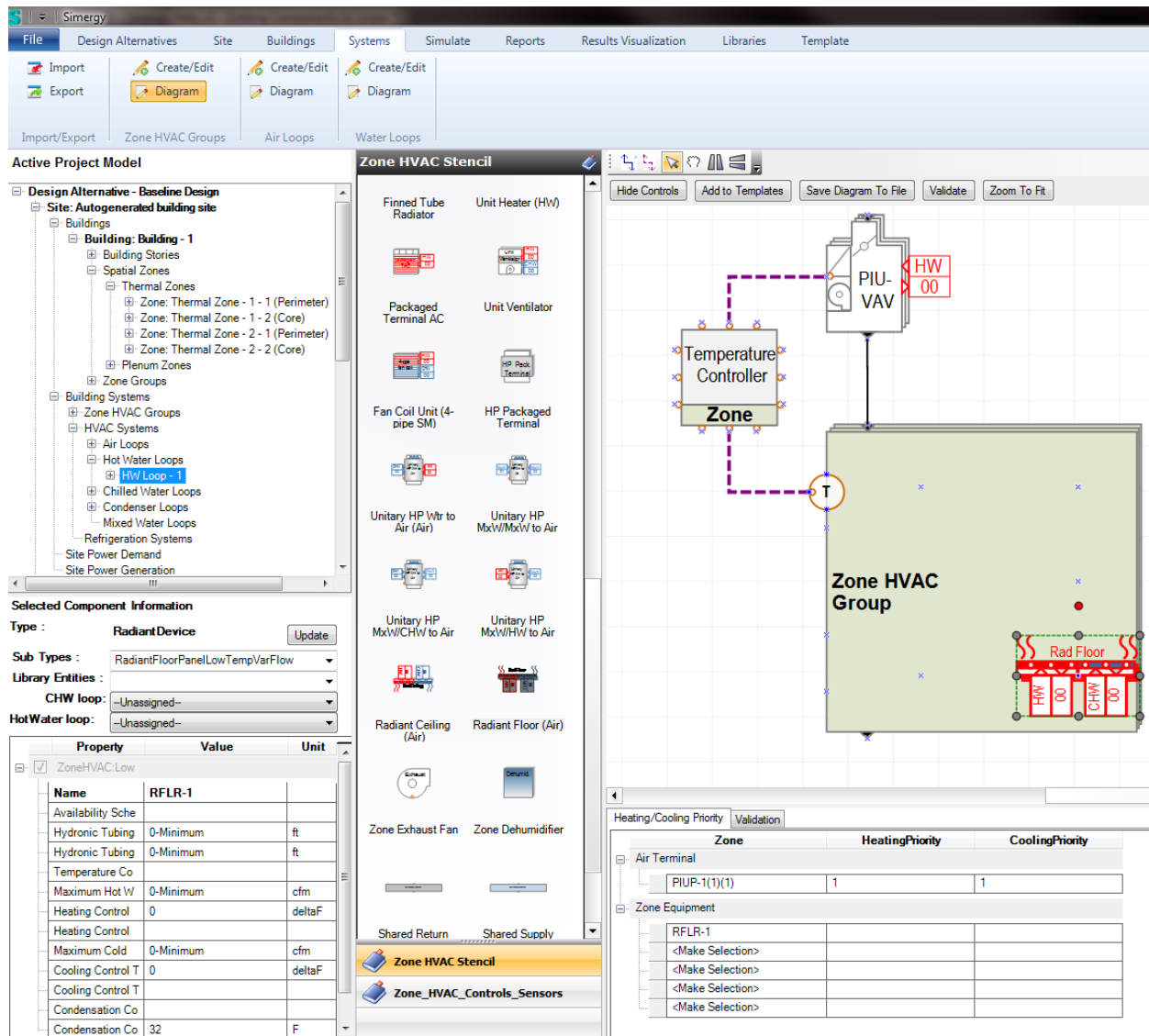
Air Loop Diagram Workspace

1. The user needs to make sure that the types of water loops (HW, CW, CHW or MxW) have been created within Systems/Water Loops/Create-Edit and System Templates have been associated with them making them available for selection.

2. Go to the desired Air Loop within the Diagram workspace (select from Create-Edit table or select from component tree)

3. Select the Component Shape that requires the Water Loop link (component shapes with off-page references). The component properties area (lower left) will become active.

4. Select the desired Water Loop to connect to from the drop down list within the component properties area (Field <Water Type> Loop)

5. Select Update.
   Result - The Component has been linked to the Water Loop and the off-page reference tag has been updated to show the number of the Loop Type that has been connected. If the user goes to

that Water Loop they will see a representation of the component shape incorporated into that loop with off-page references back to the Air Loop.
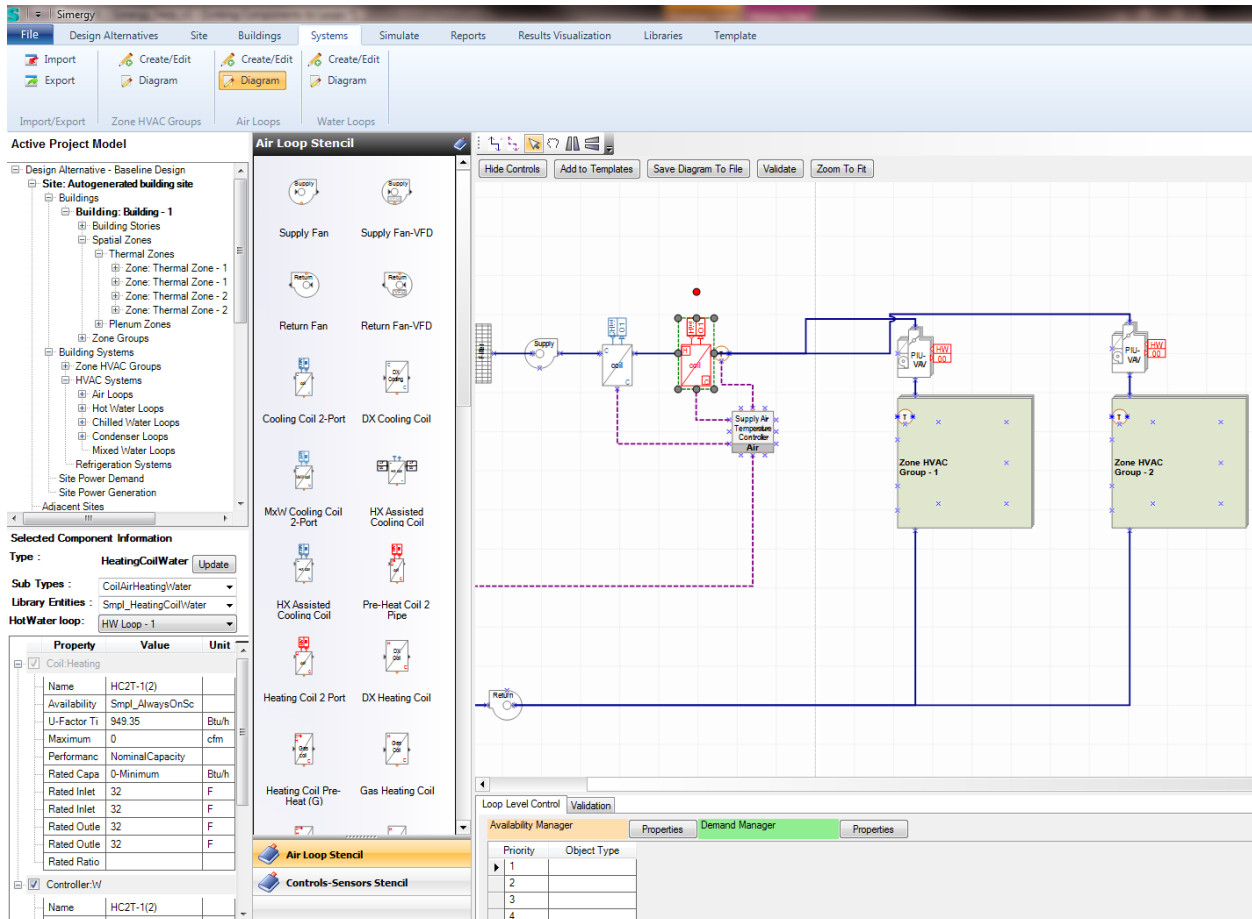

Water Loops Diagram Workspace

1. The user needs to make sure that the Air Loop(s) that the component will connect to has been created within Systems/Water Loops/Create-Edit and System Templates have been associated with them making the Air Loop available for selection.
2. Go to the desired Water Loop within the Diagram workspace (select from Create-Edit table or select from component tree)
3. Select the Component Shape that requires the Air Loop link (component shapes with off-page references). The component properties area (lower left) will become active.
4. Select the desired Air Loop to connect to from the drop down list within the component properties area (Field: Air Loop)
5. Select Update.
   Result - The Component has been linked to the Air Loop and the off-page reference tag has been updated to show the number of the Loop connected. If the user goes to that Air Loop they will see a representation of the component shape incorporated into that loop with off-page references back to the Water Loop.
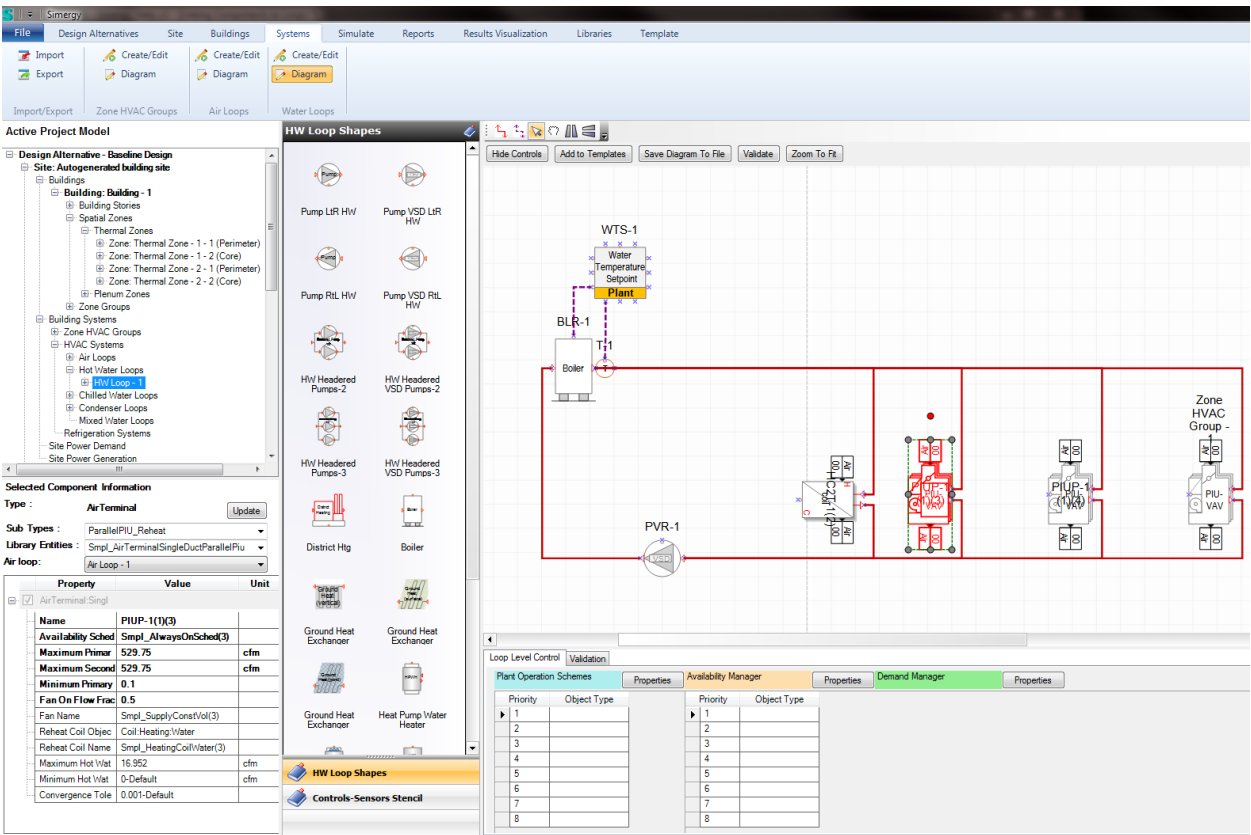
FAQ: How to Assign Component Energy to a surface?

In the scenario where a user is working with radiant floors and ceilings within a HVAC system design there may be a need to assign a surface(s) to the energy output of a component, so that the BEM models the desired performance correctly.

To begin to describe how this can be done, we will establish a bit of context by touching on a few things to remember:
- Zone HVAC Groups contain zone equipment (ex. radiant floors, radiant ceilings, chilled beams), which also includes air terminal units and supply and return plena.
- Zone HVAC Groups represent a single thermal zone or a set of thermal zones.
- Within Zone HVAC Groups the user can work with the set of thermal zones or with individual zones (which is the case in this example)
- Zone HVAC Groups establish the composition of the demand side for the Air Loop

In Simergy the Zone HVAC Groups section of the ribbon within the Systems tab is where this can be accomplished.

Tip: *By default the assignment of surfaces in thermal zones to Zone HVAC Group Equipment is the floor in all cases. So, if the user has Radiant Floor Panels as the only Zone Equipment within the Zone HVAC Group, then they can bypass the steps outlined below.*

Step 1: Create the Zone HVAC Group Template. Go to Templates/System Templates/Zone HVAC Groups
**Step 2: Select Zone HVAC Template to start with from Template Name or select New.**
Step 3: Add/edit components as needed, as well as adjusting inputs and properties
Step 4: Save existing template, name the new template, or rename a copied template
Note: Now the Zone HVAC Group Template has been saved to the Source Library and is available for selection within the drop down lists in other workspaces.
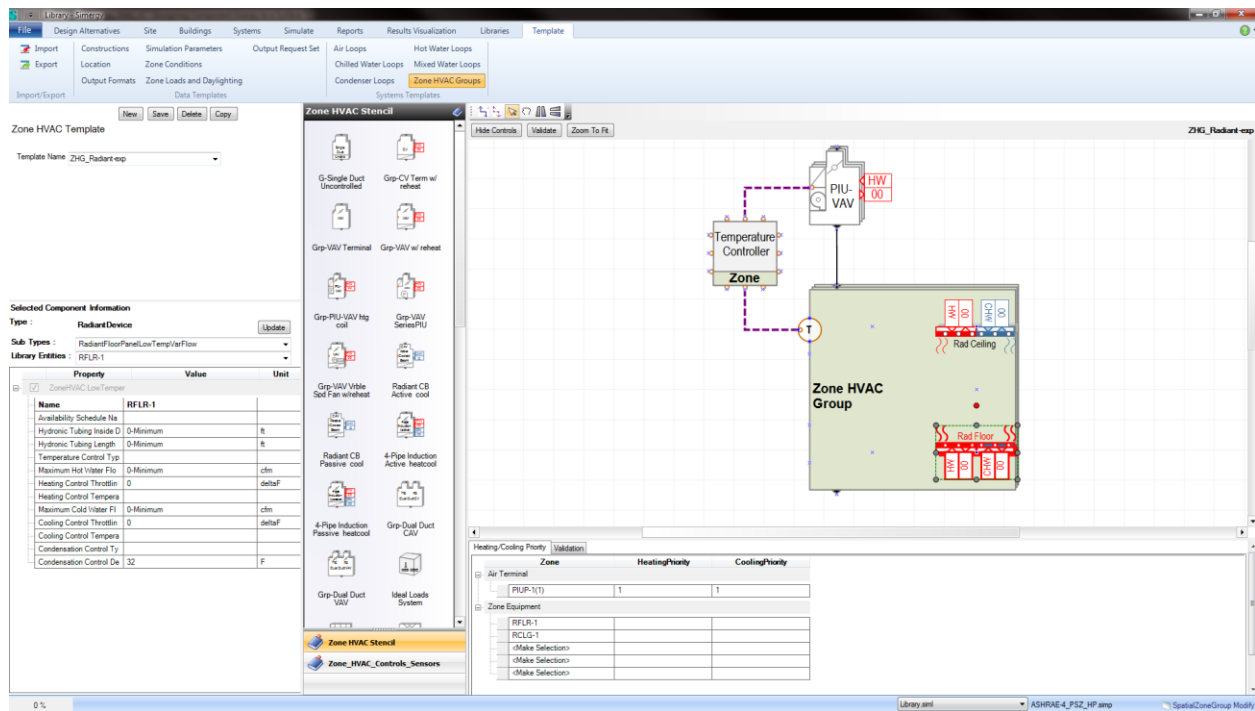
Step 5: Create a Zone HVAC Group (Systems/Zone HVAC Groups/Create-Edit/Zone HVAC Groups Table)
Step 6: Associate thermal zones with the Zone HVAC Group by selecting them within the Project Tree and dragging and dropping them onto the Zone HVAC Group.
The thermal zones will then appear below the Zone HVAC Group Name as shown
Step 7: Assign the Zone HVAC Group Template to the Zone HVAC Group by selecting from the drop down list within the Template column
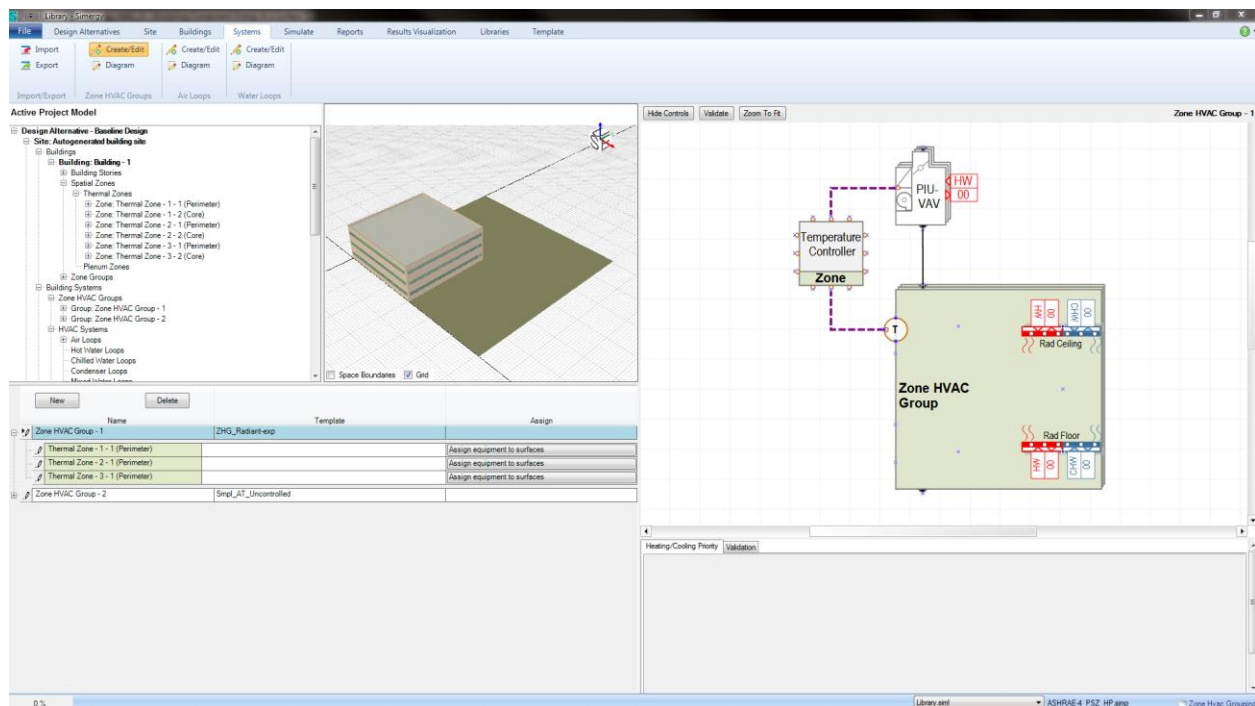
Step 8: In the *Zone HVAC Group Configuration Table* select *Assign equipment to surfaces* in the Thermal Zone- 1-1 (Perimeter) row in the *Assign column*.
A *Zone Equipment - Assign to Surface* dialog box appears and we have two options for *Equipment to be Assigned*. The Surface Names listed correspond to each surface for Thermal Zone 1. Let's start with the Radiant Floor Panel.

Note: That thermal zone is a Donut shape? The image shows that once the Assign equipment to surfaces button was selected Thermal Zone 1 is now shown in isolation within the 3D view. In this scenario the zone configuration selected when the geometry for the building was created was two zones per floor, so a single perimeter zone of a specified depth will circle the core zone on the interior.

Step 9: To begin assigning surfaces and engaging the surfaces table, the user MUST select *Assign*. The button will turn blue and the user can now engage the table.
Tip: Select on different surface name rows. See how the 3d view updates to show the selected surface in the table.

Step 10: Select and Enter % values for the desired surfaces.
We are selecting surfaces for the Radiant Floor Panel, which in this case will be the two rows called "Floor Slab for Floor 1". Since 100% of the Radiant Floor Panel energy is going to be associated with these two surfaces, we highlight each and enter 50 for each row. Not until we enter 50 in the second row does the *Save* button became active.
Note: Values totaling 100% must be entered before the assignments can be saved.

Step 11: Select *Save* to Assign the percentages to the surfaces
Note: If the user doesn't select Save, the information has not been assigned to the surface(s).

Step 12: To begin assigning surfaces and engaging the surfaces table, the user MUST select *Assign*. The button will turn blue and the user can now engage the table.

Tip: Select on different surface name rows. See how the 3d view updates to show the selected surface in the table.
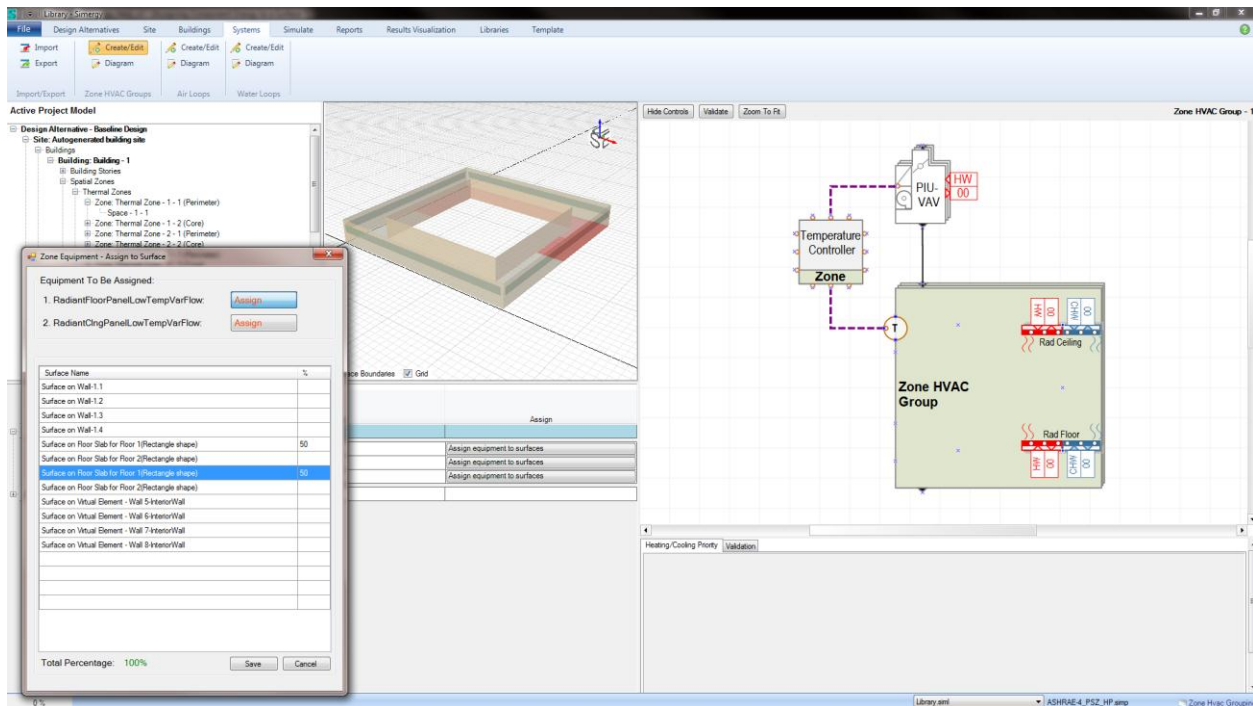
Step 13: Now let's assign surfaces to the Radiant Ceiling Panel by selecting and Enter % values for the desired surfaces.

When the user goes back to the Zone Equipment - Assign to Surface dialog box they will see that the Radiant Floor Panel designation on the button has changed from "Assign" to "Assigned".

We are selecting surfaces for the Radiant Ceiling Panel, which in this case will be the two rows called "Floor Slab for Floor 2". Since 100% of the Radiant Ceiling Panel energy is going to be associated with these two surfaces, we highlight each and enter 50 for each row. Not until we enter 50 in the second row does the *Save* button became active.

Note: Values totaling 100% must be entered before the assignments can be saved.
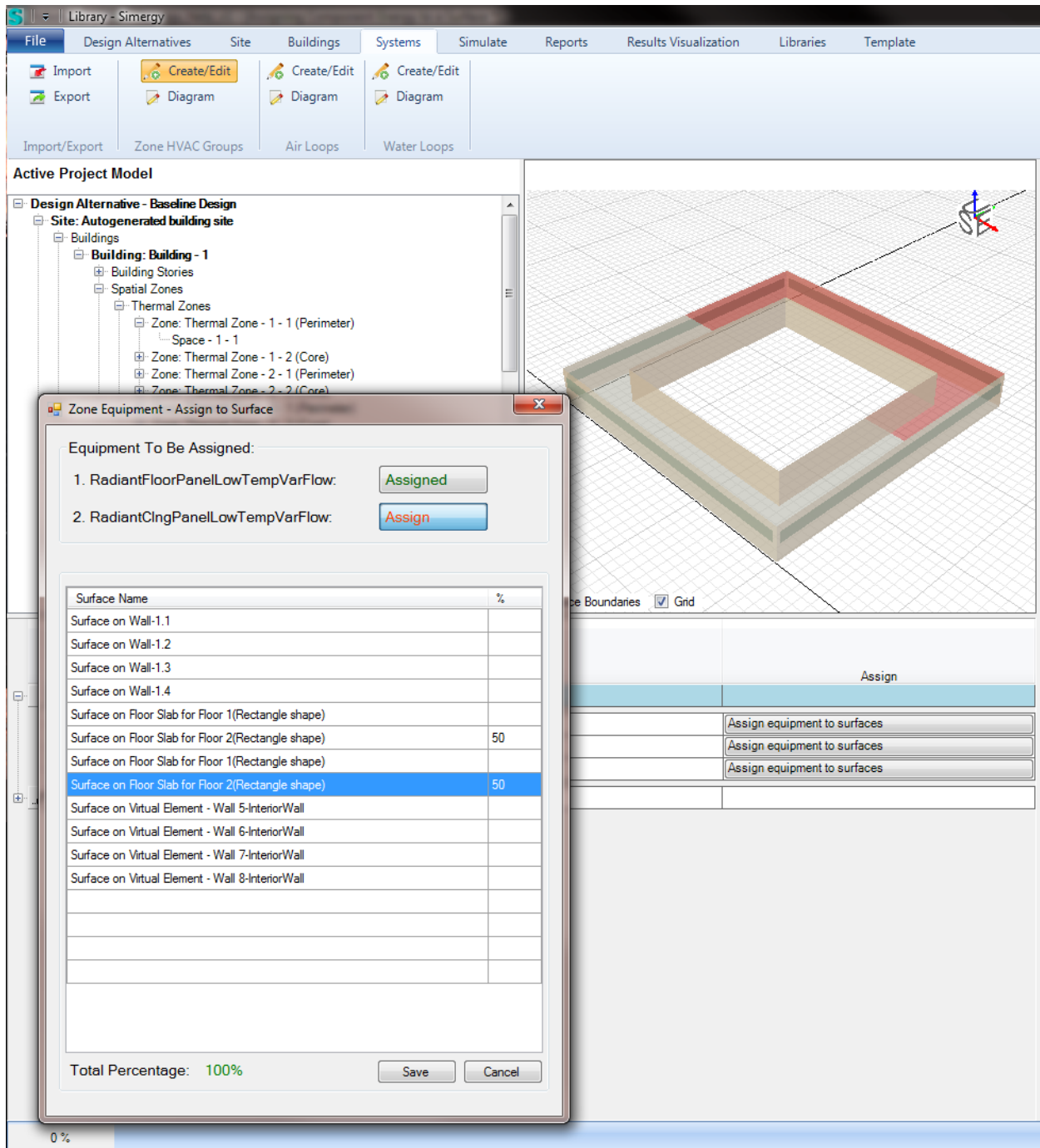
Step 14: Select *Save* to Assign the percentages to the surfaces
Note: If the user doesn't select Save, the information has not been assigned to the surface(s).

Now the surfaces have been assigned to the appropriate Zone HVAC Group equipment. If the user looks to the Assign row in the Zone HVAC Group Configuration table they will see that "Equipment Assigned" is now displayed indicating that surfaces have been assigned for this thermal zone.

New	Delete			
Name		Template		Assign
Zone HVAC Group - 1		ZHG_Radiant-exp		
	Thermal Zone - 1 - 1 (Perimeter)			Equipment Assigned
	Thermal Zone - 2 - 1 (Perimeter)			Assign equipment to surfaces
	Thermal Zone - 3 - 1 (Perimeter)			Assign equipment to surfaces
Zone HVAC Group - 2		Smpl_AT_Uncontrolled		

Step 15+: If the user wants to assign Zone HVAC Group Equipment to other thermal zones they will need to repeat the steps 8-14.

Note: Currently in Simergy the user is not able to Assign Zone HVAC Group Equipment to surfaces in multiple thermal zones at the same time.

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FAQ: What is the Validation Dashboard?

The Validation Dashboard provides the user constant feedback regarding the integrity of the model. While the BEM is being created a number of rule sets are being evaluated behind the scenes to provide feedback on the integrity of the model. More information on the rule sets included in Simergy is provided in Validation. As the BEM expands so does the "integrity matrix" and the areas that are being evaluated. The intent behind the Validation Dashboard is if the integrity of the model is evaluated as the user moves forward, then there is less likely to be major issues and/or surprises for the user when they get to the point of simulating the model. However, if problems persist, the user has a guide to where the problem areas are located.   For the cells in the matrix that are being evaluated one of three options will appear in the cell:

- a green circle with a white checkmark, which indicates everything is in order
- a orange circle with a white exclamation point, which indicates the user should review this issue
- a red circle with a white "x", which indicates that this issue needs to be addressed prior to simulation.

When either the orange circle with an exclamation point or the red circle with the "X" appear in a cell, the user can select on the circle and additional information on the issue and the issue detail will appear in the table below.

The user can view the Validation Dashboard on either the Design Alternatives or Simulation Workspace. It is recommended that the user check the Validation Dashboard early and often, so that potential problems with the BEM can be identified and addressed earlier in the process.

The Validation Dashboard contains four tabs that contain different topic areas that are being evaluated:

- **Project/Site/Context**
  This tab evaluates the geometry and other information about the BEM. The validation matrix has eight headings that are the basis of the validation, which include Identification and Other Data; Required Properties; Weather; Other; Geometry; Containment; Referencing; Rules and Validation.

Project/Site/Context	Spaces And Zones	Systems	Simulations

Design Alternative	Identification And Other Data	Required Properties	Weather	Other	Geometry	Containment	Referencing	Rules Based Validation
Baseline Design	✓	✓				✓		
Autogenerated building site	✓	✓	✓		✓	✓		
Building - 1	✓	✓			✓	✓		
Building Story - 1	✓	✓			✓	✓		
Building Story - 2	✓	✓			✓	✓		
Building Story - 3	✓	✓			✓	✓		
Building Story - 4	✓	✓			✓	✓		
Roof Story - 5	✓	✓			✓	✓		

Issue	Issue Detail

- **Spaces and Zones**

	Project/Site/Context	Spaces And Zones	Systems	Simulations						

Stories	Identification And Other Data	Required Properties	Geometry	Space Bounds	Zone	Zone Group	Loads (People, Lights, Equipl	Conditions	Constructions	Rules Based Validation
⊟ Building Story - 1	✓	✓	✓	✓	✓	✓	✓	✓	⚠	
⊞ Occupied Spaces	✓	✓	✓	✓	✓	✓	✓	✓	⚠	
Unoccupied Spaces										
⊟ Building Story - 2	✓	✓	✓	✓	✓	✓	✓	✓	⚠	
⊞ Occupied Spaces	✓	✓	✓	✓	✓	✓	✓	✓	⚠	
Unoccupied Spaces										
⊟ Building Story - 3	✓	✓	✓	✓	✓	✓	✓	✓	⚠	
⊞ Occupied Spaces	✓	✓	✓	✓	✓	✓	✓	✓	⚠	
Unoccupied Spaces										
⊟ Building Story - 4	✓	✓	✓	✓	✓	✓	✓	✓	⚠	
⊞ Occupied Spaces	✓	✓	✓	✓	✓	✓	✓	✓	⚠	
Unoccupied Spaces										
⊟ Roof Story - 5										
Occupied Spaces										
Unoccupied Spaces										

Issue	Issue Detail
Constructions	Reference to a SimTemplateConstructions was not found

- **Systems**

- **Simulations**

Simulation Configuration	Identification And Other Data	Required Properties	Design Alternative	Simulation Parameters	Output Requests	Output Formats	Output Results
⊟ Configuration 1	✅		✅	✅	❌	❌	
Simulation Runs							

Issue	Issue Detail
Output Request	Reference to a TemplateOutputRequestSet does not exist

It is important to note that each Design Alternative will have its own Validation Dashboard. To change the Validation Dashboard between different Design Alternatives, the user must go to the Design Alternatives workspace and select the desired Design Alternatives from the Select Design Alternatives table. Selecting a different Design Alternative not only updates the Validation Dashboard, but also changes the Project Model Tree as well.

FAQ: How can I import an IFC (Industry Foundation Class) model?

Location: Multiple Workspaces - Import
Video: Geometry Workflow 1 - IFC Import
The following outlines an approach from the Design Alternatives tab. In addition, the Import workspace can be accessed from the Site, Building, Systems, Libraries and Templates tabs.
Note: to import an IFC file, it needs to be an IFC 2.3 Concept Design BIM, Model View Definition

- Select *Import* from the ribbon to access the Import Workspace
- *Browse* to locate the IFC 2.3 file to import
- Select *Import Design Data* to enable the initial preview of the IFC model
- User can now "visually" review the model, and can also use the project component tree to select the building floors to review the import properties displayed in the table below.
- To complete the Import Process select *Copy to E+ Project Model*
- The IFC model has now been imported into Simergy, however it hasn't been saved yet.

Tip: Importing an IFC model and importing a DWG/DXF file are handled differently. To import a DWG/DXF to use as an underlay to create geometry or for a reference use the DWG/DXF button on the 2d view within any of the workspaces where it is displayed.